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MONTANA OUTDOORS

Turn to page 17 for a pull-out pamphlet, "Montana Mountain Goats."

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MONTANA OUTDOORS

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Front Cover—The article on page 11 of this issue surmises that stories told around campfires of the future will be liberally sprinkled with memories of deer hunting in Montana in the 1980s. If you require striking, dramatic, and incontrovertible proof, take a gander at **Conrad Rowe's** mule deer.

Inside Front Cover—The Hungarian partridge, photographed by **Alan G. Nelson** in the kind of country it typically inhabits, may not be Montana's best known game bird. But watch out—it's world-class in running, hiding, and dodging bird shot.

Back Cover—Seeing a big bull at close range is the stuff of many a hunter's dream. Make dream reality by turning to **Dave Samuelson's** bull elk painting.

BRITTS & HUNS

story and photos by Dave Books

In the hunting and fishing world, some things just naturally go together...dry flies and rainbow trout, English pointers and bobwhite quail, mule deer and sagebrush, Britts and Huns....

Britts and Huns?? That's right, Brittany spaniels and Hungarian partridge. It's one of the best-kept secrets in the West, even though nobody's really trying to keep it a secret. In fact, Charley Waterman, an outdoor writer who divides his time between Montana and Florida, goes out of his way to sing the Hun's praises, but admits it doesn't do much good. "The Hun has no tradition, glamour, or press agent—except me, and I don't work at it full time," he laments.

While Charley claims leadership in the lonely field of Hun writing, he concedes dominance in the actual art of Hun hunting to long-time friend Ben Williams, a Livingston, Montana, resident who has been hunting Huns for upwards of 30 years behind a procession of Brittany spaniels. "Ben Williams of Montana may be America's leading Hun hunter," Waterman writes. Then, tongue-in-cheek, he adds: "But don't

get excited, Ben. You don't have much competition....''

Ben Williams laughs when he tells this story—it's obvious that he and Charley like to kid each other. ''But,'' says Ben, ''Charley's a heck of a Hun hunter in his own right—he knows the birds as well as anyone. He likes to play himself down, but you can bet that when he writes something, it comes from experience. He's been there.''

My first introduction to Ben Williams came in the pages of Charley Waterman's books and magazine articles on upland bird hunting. Then, several years ago, while researching an article of my own, I called Ben for information. We hit it off pretty well over the phone and before we hung up we agreed to get together for a hunting trip sometime. A couple of years slipped by, but last fall our schedules finally meshed and early one October morning I found myself driving south through the Shields River valley toward Ben's home north of Livingston.

I knew I had the right house when I pulled into the yard and spotted the dog kennels, from which seven Brittany spaniels voiced their enthusiastic greeting. I knocked on the door and Ben Williams—retired high school teacher, sculptor, part-time architect, and full-time Hun hunter—ushered me into the kitchen of his self-designed ranch style home. While I admired the view from the floor-to-ceiling living room windows, Ben gathered some sandwiches, dill pickles, cookies, and pop into a small cooler. A short time later, we loaded four excited Brittanys into dog boxes in the back of Ben's pickup and headed down the road for Hun country. The day promised to be unseasonably warm, so Ben was anxious to get the dogs in the field as early as possible to take advantage of the cool morning air.

While we drove, Ben explained that he wanted to show me two types of Hungarian partridge habitat during my two-day visit. Today we would hunt classic Hun habitat—fields of wheat stubble dissected by a creek bottom and several brushy side draws that led into grassy, sagebrush-dotted hills. Food, cover, and water all within easy reach. ''Hun heaven,'' as Ben called it. ''But,'' he added, ''it's not necessary to have grain fields to have good Hun hunting. Plenty of Huns in Montana live and die in the grassland without ever tasting a kernel of wheat. I'll show you some of that country tomorrow. Trouble is, hunting 'em there can be tough, because the density of birds is lower. We may have to do a lot more walking to find them.''

Walking is something Hun hunters must be good at. Even with Ben's hard-earned knowledge of Hun habits and behavior, he admits that covering a lot of ground is the key to success. "When I started hunting Huns back in the 1960s, I didn't know a thing about it. But the one thing I *did* know was how to walk. In those days, I hunted a lot with Frank Feist, who's now a game biologist for your department in Great Falls. Frank and I used to hunt all day, morning till night—we'd hardly stop for lunch. We'd get birds, but believe me, we earned 'em. Over the years, I guess I've gotten more efficient, but I still figure I walk about a mile for every bird I bag."

We left the highway for a county road, and eventually turned into a long lane that led to a ranch house. After stopping to chat briefly with the landowner, who greeted Ben with a cheery, "Hello, Mr. Hun," we drove a little farther and parked near the creek in the shade of some cottonwoods. Ben turned out the four dogs—Shoe, Tosh, Paddington, and Leo—and uncased his lightweight 20-gauge over/under. I wanted some pictures, so I gritted my teeth and uncased my camera.

Shoe and Tosh, two rangy 6-year-olds, walked a little gingerly at first. "I hunted Shoe and Tosh hard last week, and their feet are still a little tender," Ben explained. "I had two friends out from Virginia—we had great hunting, but believe me, we put on some miles. These guys are good shots and hard hunters, but they have desk jobs and were a little out of shape when we started. By the end of the week, they'd each lost about 10 pounds."

As we started up the creek drainage, following the edge of a stubble field, Ben talked about his dogs. "They'll warm up after a bit and really start ranging. Wait'll you see Shoe when he gets going—he'll be out there 400 or 500 yards sometimes. Leo and Paddington are old-timers, and they won't run as wide. But even at 13, they're still good dogs. That's one thing I like about Brittanys—they hold up well as they get older."

"I breed these dogs specifically for hunting Huns," Ben continued. "I want them leggy and wide-ranging and I like lots of white in their coats so I can spot them easily when they're on point. Hun country is big, and the fact is, wide-ranging dogs will find more birds and find them faster. That's also why I like to run four dogs at a time—it increases my odds of finding birds."

We hadn't walked more than 20 minutes when Shoe slammed into a classic point near the corner of the stubble field. Within a few moments, Tosh had locked up 15 yards behind him, and 25 yards farther back, Leo and Paddington joined the parade. Ben's dogs honor one another's points on sight, a necessity for hunting with more than one pointing dog at a time.

Ben and I, still 100 yards or so behind the dogs, hurried to catch up. It may not be necessary to sprint when you're hunting Huns, but dawdling isn't a good idea, either. Huns tend to be skittish—they often run in front of dogs and hunters, and sometimes flush wild. The best policy is to get to where the dogs are pointing as quickly as possible. Since stopping behind the dogs often precipitates a flush too far from the gun, it's best to keep moving forward until the birds take wing.

When a bird dog goes rigid on a picture-book point, the air takes on a palpable tension you can almost cut with a knife. With *four* dogs on point, the suspense is downright nerve-racking. A covey of Huns exploding like shrapnel from the wheat stubble has a way of undoing most shotgunners. With all those birds in a bunch, there is a strong temptation to "flock shoot," but you quickly learn there's more air around the birds than you thought possible, since firing at the flock without picking a specific target rarely pays off.

On the covey rise, Ben downed a Hun with his first shot, and didn't try for a second. Shoe retrieved the bird, accepted a quick pat on the head, and whirled away to look for more. While he smoothed the feathers of the pretty, gray-brown bird, Ben said, "I know there are at least six coveys of Huns somewhere in this area. I'll just try to shoot one bird on each covey rise to give you more chances to get photos." Over the next few hours, we were treated to a procession of classic points; by lunchtime, Ben had filled his six-bird limit, and I was running low on film.

Ben has a way of making Hun shooting look easy, but anyone who's tried it will vouch for the fact that it isn't. He advises beginners to pick one bird and concentrate on it, and not worry about shooting doubles until they become proficient at bagging just one. When it comes to doubles, Ben says, "You gotta get with the program! You have only a few seconds to pick a target, set your feet, mount the gun, swing through, pull the trigger, pick another bird, and do it all again. There's no greater challenge than doubling on Huns."

Why haven't more of Montana's hunters discovered the excellent sport offered by the Hun? For one thing, Montana historically has been a big game state. Elk, deer, antelope, mountain goats, bighorn sheep, and moose have always overshadowed the state's bird hunting opportunities. Many of the hunters who do pursue game birds could best be described as casual—to these hunters, who may spend only a few days afield each bird season, grouse and pheasants seem to hold a greater attraction.

As Charley Waterman points out, the Hun has no tradition here—he's a European import, first arriving in northern Montana about 1915, when birds planted in Alberta expanded their range and moved south across the border. In 1922, the Montana Fish and Game Commission began importing birds from Hungary and Czechoslovakia and releasing them throughout the state, a program that continued until 1926. Although its populations quickly flourished, the Hun never captured the imagination of the sporting public the way the exotic ring-necked pheasant did, perhaps because the Hun is a shy, inconspicuous fellow who tips the scales at a mere 14 ounces—less than a third the weight of a ringneck rooster. To a population of riflemen accustomed to talking in terms of 200-lb. deer or 600-lb. elk, a little gray bird that's adept at running, hiding, and dodging bird shot may just not seem worth the effort.

Yet, there are some signs that the Hun's image is improving. For one thing, in 1977, the Montana Hun harvest exceeded the pheasant harvest for the first time. While this may have been

more a reflection of an extremely good Hun year and a mediocre pheasant year than an index of the Hun's popularity, it still seems to support the notion that more people are paying attention to the Hun. Second, there is a small but growing cadre of Montana bird hunters who hold the Hun in especially high esteem. These are the specialists, like Ben Williams, who admire the heft of a well-balanced shotgun and thrill to the sight of a bird dog on point. These hunters are looking for a wingshooting challenge—something the Hun offers in spades.

Ben, who moved to Montana from Washington state in 1963, believes he was among the first to run Brittany spaniels here. For many years, he got lots of curious stares and questions about his "little orange and white dogs." But the Brittany is no longer a curiosity in Montana; its popularity here has paralleled its rise to prominence as a favorite hunting dog breed across the nation.

family dogs. Weighing 30 to 50 pounds with a medium-length coat, they are well-suited to Montana's climate and terrain. Ben's advice for prospective Brittany owners is fairly simple: "Teach the dog to behave when it's a pup—to come when called and to 'whoa' [stand motionless] on command. Be careful about introducing it to gunfire; the best way is to take the pup into the field, let him find and chase some birds, and when he's preoccupied with the birds and having fun, fire a .22 pistol in the air. Eventually you can work up to the louder noise of a shotgun."

"There's no substitute for field experience," he continues. "In late summer, after the birds are old enough to fly well, I start working my dogs on pheasants, sharptails, and Huns. I get into the field every day I can for several weeks before the hunting season. These dogs are born with the right instincts—they just need a chance to develop their hunting skills."

Ben Williams admires a Hungarian partridge his Brittanys have pointed and retrieved. Huns provide the ultimate wingshooting challenge for hunters who admire the heft of a well-balanced shotgun and thrill to the sight of a bird dog on point.

Developed in France in the mid-19th century, allegedly by French poachers who needed a small dog that could be easily concealed, the Brittany spaniel is believed to have originated from crosses between small French land spaniels and English setters. By 1904, the Brittany had evolved into a distinct breed, and by 1912, a few individuals were showing up in this country. Its popularity increased slowly at first, but by 1936, the Brittany Spaniel Club of North America had been formed, and as the Britt's reputation as a hard-hunting little dog with a gentle disposition grew, so did the number of Americans who wanted one.

While Ben Williams concedes that any well-trained gun dog can be of help in hunting Huns, he likes Britts because they point and retrieve well, are eager to please, and double as good

Training your dog on wild birds before hunting season has the added advantage of helping you locate coveys, according to Ben. Huns tend to be found in the same areas of choice habitat year after year. Based on where he's found them in the past and on his summer dog-training expeditions, Ben knows the approximate locations of several dozen coveys before the bird season begins. This gives him a running start when the season opens and allows him to do a lot of hunting without putting too much pressure on just a few coveys. Ben believes that decimating a covey is not only poor sportsmanship, but that it may result in failure of a covey to re-occupy the site the next year.

Hun populations can fluctuate dramatically from year to year, depending on winter mortality, spring nesting condi-

tions, and other factors. Like other upland game birds, Huns have a high annual mortality—in the neighborhood of 75%. According to Department of Fish, Wildlife and Parks biologist John Weigand, who did his Ph.D. thesis on Hungarian partridge, weather conditions in spring set the stage for a population increase or decrease. A dry spring results in early nesting and good production, while heavy rainfall during nesting or after hatching is sure to dampen bird production for that year.

In the 25 years that Ben Williams has hunted Huns in Montana, he's seen good years and bad years. His gunning diary shows that 1968, 1969, 1977, and 1983 were especially productive in his area. But if our two-day outing last October was any indication, 1987 was also a banner year, a fact since confirmed by DFWP harvest statistics. On the first day, we had seen about six big coveys of Huns in less than four hours, flushing several of them more than once. The next day, hunting in the hilly grassland country north of Livingston, we saw almost as many birds, although we covered more country in the process.

By late morning of the second day, Ben had four birds nestled in his game vest, and I had shot up a couple more rolls of film. The day was heating up, and we had taken a break to rest and water the dogs in the creek that flowed south through the broad expanse of grassland. I decided it was time to trade my camera for the 12-gauge over/under that had been bumping along on my back all morning, suspended by a detachable shotgun sling.

Shortly after we resumed walking, Shoe disappeared over the high bank above the creek. When five minutes had elapsed and he hadn't returned, Ben gave me a knowing look. We struggled up the steep bank and over the top, to find him frozen on point about 100 yards away. The other dogs quickly moved up to honor Shoe's find, and Ben and I hurried forward, trying to compose ourselves for the moment of frantic action we knew was coming. As we walked out in front of the dogs, a big covey—perhaps 12 or 14 birds—whirred out of the grass about 20 yards ahead of us. We each dropped a bird with our first shot; I couldn't sort another one out of the hurtling blur in time, but Ben knocked a second bird from the covey at a good 40 yards. That's classic wingshooting, whether it's bobwhite quail on a Georgia plantation or Hungarian partridge on the Montana prairie.

After the birds were retrieved, the dogs praised, and congratulations exchanged, we decided to call it a day. We had a long, uphill walk back to the truck, and a cold can of pop and a sandwich were starting to beckon. By the time we got there, my legs were comfortably tired and I was beginning to sympathize with the Virginians who had followed Ben around for an entire week.

After lunch, we picked a vantage point at the edge of the creek where we could see the tawny grassland stretching out for miles below us, and sat down to clean our birds. After rinsing them in the cold, clear water, it was time to load our gear and head back to Ben's house.

The two days had gone by too quickly. As I was leaving, I asked Ben if he had any final words of advice for prospective Hun hunters. "Get off the road, walk hard, and shoot well," he admonished, with a twinkle in his eye. And, he added, nodding in the direction of the dog kennels, "Get a Brittany spaniel."

The little French dog and his sidekick from Hungary are a hard combination to beat.■

Broiled Huns

Use young birds for this recipe. Cut two to four Huns in half. Marinate them in a Ziploc bag in a mixture of:
1/2 c soy sauce
1/2 c white wine
1/4 c brown sugar
1 t ginger

Grill over hot coals or a gas grill, basting with a small amount of the marinade. Cook five to eight minutes per side. Serve with wild rice. Serves two to four.—*Ben Williams*

Huns with Champagne Sauce

four to six Hun breasts
1/2 bottle Champagne
1 small onion, thinly sliced
2 small cloves of garlic, crushed
3 T juniper berries, crushed or ground
12 T butter or margarine

Cut Hun breasts in half and marinate in the Champagne (reserving 1/2 c), onion, garlic, and juniper berries for one to three days.

Heat 5 T butter or margarine in a skillet over moderately high heat. Drain Huns; saute three minutes or until golden brown. Reduce heat, cover, and cook four to five minutes. Remove cover, increase heat, and turn breasts. Saute four or five minutes, or until breasts are cooked. Keep warm.

Pour off fat (if any), and add the 1/2 c of Champagne. Deglaze the pan over high heat. Remove from heat.

Add 7 T butter or margarine, whisking until butter is incorporated and the sauce has thickened slightly. Season to taste.

Pour over warm Hun breasts. Serve immediately. Serves four to six.—*Ben Williams*

Huns in Sour Cream Sauce

four Huns (whole)
1/2 c milk
1 t salt
1/8 t pepper
1/2 t poultry seasoning
1/8 t basil
1/2 lb. mushrooms
1 medium onion, chopped
1/4 c butter
2 cloves of garlic, minced
1/2 c white wine
1 chicken bouillon cube
1 c water
1 c sour cream

Dip Huns in milk; dredge in flour seasoned with salt, pepper, and poultry seasoning, and set aside.

Saute onions, mushrooms, and garlic in butter. Add Huns and brown evenly. Add more butter if needed.

Remove Huns from pan and add white wine, water, basil, and bouillon cube. Heat just to boiling. Place Huns in covered casserole, pour half of the liquid over the birds, and bake at 350° for one hour.

Ten minutes before serving, simmer reserved liquid and add sour cream. Pour sour cream sauce over Huns and serve. Serves four.—*Bobbie Williams*

Bowhunter Education in Montana

Several years ago, a group of sportsmen became alarmed at what they felt was an assault on their sport. The attack came about because of poor image and erroneous perceptions. This group had several options at its disposal for countering the assault, and in the end, it chose one that would have a deep-rooted, long-lasting effect.

Some hunters and others feel that bowhunters are having a negative impact on wildlife. The Montana Bowhunter Association (MBA) has taken this to heart and is working to change that perception.

Back in the late 1970s, the MBA invited the "grandfather" of bowhunter education to come to Montana and train concerned individuals to teach others proper bowhunting fundamentals. William Wadsworth, founder and national chairman of the National Bowhunter Education Foundation, has dedicated his life to bowhunting and feels strongly about bowhunter education: "If bowhunting as we know and enjoy it today is to survive, we must be hunters who appreciate and respect the environment in which we hunt, as well as maintain a strong desire to uphold the highest standards of our sport. I urge all bowhunters to take an active role and participate in a bowhunter education course."

A large pool of new bowhunter education instructors from across Montana was recruited and trained by Wadsworth. Yet, nothing happened. Very few classes were completed, and only a handful of instructors taught each year.

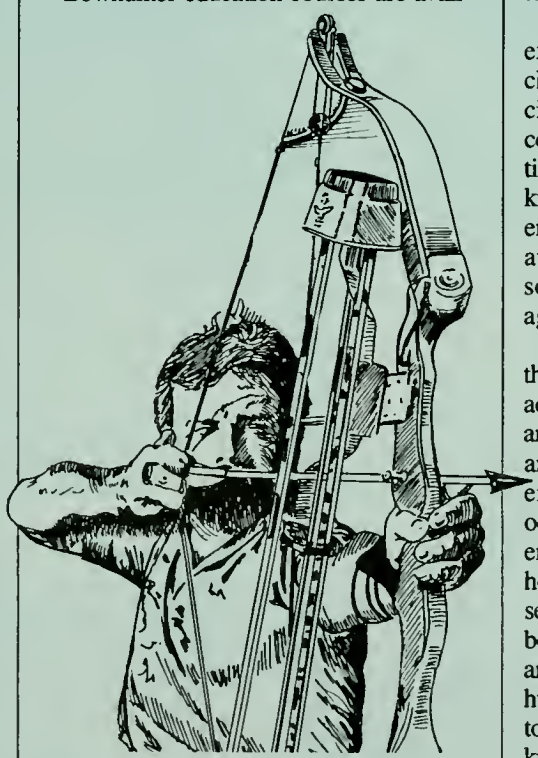
Recently, the assault surfaced again. This time the MBA, utilizing lessons learned from 10 years of growing, regrouped to challenge the assault. The group proposed legislation to require those from 12 through 17 years of age who wanted to purchase a bow and arrow license to complete a bowhunter education course, in addition to the firearm hunter education course. This measure passed the 1987 Legislature and became effective March 1, 1988, with the Department of Fish, Wildlife and Parks assigned administrative responsibilities for the program.

This is not another restrictive action by government. The new bowhunter education program was developed, sponsored, and *paid for* by bowhunters.

A federal excise tax on firearms, ammunition, and bowhunting equipment is refunded to the states under the Federal Aid in Wildlife Restoration Act, better known as the Pittman-Robertson (or P-R) Act. This money can be used for wildlife management activities as well as hunter education programs. But the DFWP believed there would not be enough money to administer both hunter firearm and bowhunter education programs.

The MBA responded by asking that the bow and arrow license fee be increased $1 to pay for the education program. Like all other sport hunting activities in which hunters pay their own way, so do bowhunters.

Bowhunter education courses are available in all 50 states and several foreign countries. Montana is one of the few states *requiring* bowhunter education. Six states require bowhunter education certification for all *first-time* bowhunters. Montana's new law requires bowhunter education certification for those under 18 years of age, regardless of previous bowhunting experience. This has created many benefits, but some problems, too.



The main goal of the bowhunter education program is to improve the caliber of the bowhunter through education and to protect bowhunting privileges in a world in which the hunting tradition is being steadily eroded.

Many people have contacted the department wondering why they, or a member or their family, have to complete a bowhunter education course if they've already had several years of bowhunting experience. It's a valid question for which there is an equally justified answer—the MBA believed that young bowhunters could still use basic education in bowhunting fundamentals. In fact, the MBA felt even veteran bowhunters could stand a refresher course, and this has turned out to be the case.

Most of the participants, both new and experienced bowhunters, have left the class with a greater knowledge and appreciation of bowhunting. Some began the course thinking it would be a waste of time and that they knew all there was to know about the sport. Many of these folks emerged humbled, wiser, and more aware, not only of the sport, but also of some of the negative charges brought against it.

The bowhunter education course helps the participant become a safer and more accomplished bowhunter in a minimum amount of time. Among the course topics are responsibilities of a bowhunter, proper equipment, safety and hunting methods, and game recovery. The course emphasizes the image of the bowhunter—how the hunting and non-hunting public sees the bowhunter, the need to keep bowhunting equipment in top condition and broadheads sharp, the need for bowhunters to be in good condition, the need to identify the best spot to aim and to know that the arrow will hit its mark.

The bowhunter education course will not magically transform all participants into super bowhunters and sportsmen. It takes hours of practice to learn how to use bowhunting equipment in a competent, consistent way. It also takes practice to be a true sportsman. Basics can be learned and re-learned through the bowhunter education course, as well as the firearm hunter education course.

Approximately 240 volunteers throughout Montana donate time and energy to teaching new and veteran bowhunters the proper fundamentals of bowhunting. Firearm hunters and bowhunters are both "hunters," and, as such, they should work together to ensure the future of sport hunting in Montana. Education is one of the tools that will ensure that future. The rest is up to hunters themselves.

Bowhunter education classes will again be available at the start of the new year. Contact your local bowhunting organization, pro shop, or any Department of Fish, Wildlife and Parks office to find out when the next classes will be conducted.—*Tim Pool, supervisor, Recreation Safety Education Programs*

MO Cops A Third

Montana Outdoors, the department's official bimonthly magazine, has been selected as one of North America's top conservation magazines by the Association for Conservation Information, Inc. (ACI).

The magazine, published in Helena, was awarded third place based on the quality of writing and graphic presentation. It competed against 23 other publications. In 1985, *Montana Outdoors* took second place in the ACI competition.

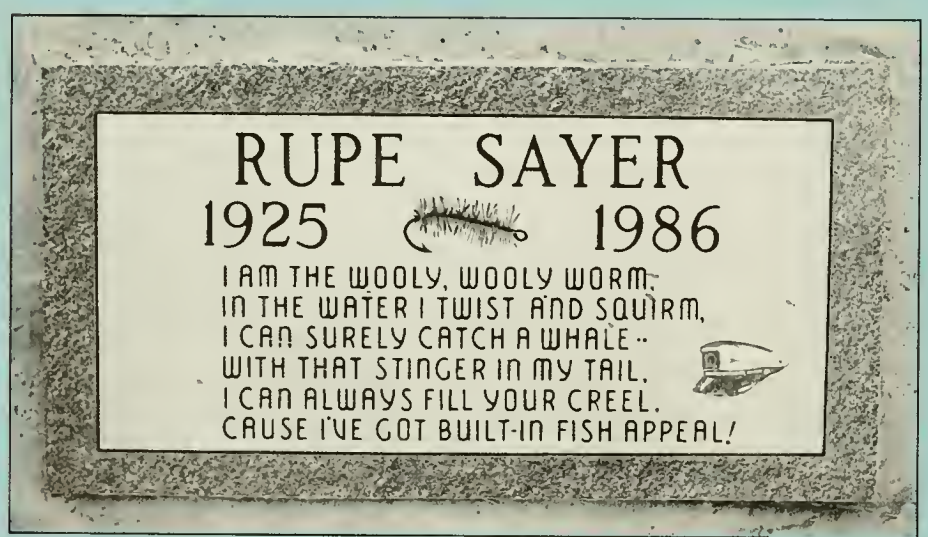
Judges in this year's contest, which ACI sponsors annually, were Margaret Nichols, managing editor of *Field & Stream*, and David Quammen, writer of the "Natural Acts" column for *Outside* magazine and a 1987 winner of the National Magazine Award in the Essays & Criticism category for work that appeared in that column.

First place in the contest was a tie between *Michigan Natural Resources* and *South Carolina Wildlife*, publications of the Michigan Department of Natural Resources and the South Carolina Wildlife and Marine Resources Department, respectively. *Missouri Resource Review*, a publication of the Missouri Department of Natural Resources, came in second.

Founded in 1938, ACI is an association of federal, state, and independent wildlife agency public affairs units from the United States and Canada. The awards were presented at ACI's 50th anniversary meeting, conducted in July in Steamboat Springs, Colorado.

Credit Line Switch

We switched two credit lines on page 27 of the July/August 1988 issue. The paddlefish picture was taken by Dave Castleberry, while the picture of the pallid and shovelnose sturgeons was taken by Glenn Meier.


RUPE SAYER
1925 1986
I AM THE WOOLY, WOOLY WORM.
IN THE WATER I TWIST AND SQUIRM,
I CAN SURELY CATCH A WHALE..
WITH THAT STINGER IN MY TAIL.
I CAN ALWAYS FILL YOUR CREEL.
CAUSE I'VE GOT BUILT-IN FISH APPEAL!

With his captain's cap, homemade belly boat, and trusty green woolly worm, fly fisherman Rupe Sayer cut a familiar figure on the Missouri River. His favorite fishing holes were not far from his river front home in the tiny town of Craig, best known for its fishing access to the Missouri River's blue ribbon trout waters.

Sayer was a quiet champion of the Missouri as both a willing volunteer and forthright supporter of Department of Fish, Wildlife and Parks' management efforts on the river.

In 1986, while fishing in the Missouri River, Rupe Sayer was drowned.

Just over the fence, near the southwestern corner of the DFWP Fishing Access Site at Craig, Rupe's wife, Arlyn, placed a memorial to her husband. The memorial, and Rupe's own verse, is pictured above (DFWP photo: Tom Warren).

Pesticide Warning—It's Gone

The warning about possible pesticide contamination in upland game birds that has appeared on Montana bird hunting regulations since 1981 will be removed this year, according to department wildlife officials.

Officials asked that the warning be removed after tests for 17 pesticides in a total of 24 sharp-tailed grouse, pheasants, and Hungarian partridges showed detectable levels of one pesticide—heptachlor epoxide—in only two Hungarian partridges. Although samples were taken from farmlands throughout eastern Montana, both of the contaminated birds were found in a single location within Roosevelt County.

"We're not sure of all the reasons for the decline, but it may be a result of Montana farmers using less insecticide, or less toxic insecticide," said John Weigand, chief of the Wildlife Division's Research and Technical Service Bureau. "Whatever the reason, it's good news for upland game birds and for other species of wildlife in Montana, and we appreciate the efforts of those members of the agricultural community who are responsible."

Many grain farmers are now using alternative insecticides—fenvalerate and lindane—for cutworm and wireworm control. Neither compound is as toxic to fish and wildlife as endrin or heptachlor, nor do they pose threats to human health.

In tests performed in 1981-82, 29% of the upland game bird samples taken from eastern Montana farmlands contained detectable levels of heptachlor epoxide.

Weigand said the most recent tests, performed late last summer, revealed no evidence of endrin in any of the sampled birds. The heptachlor epoxide concentrations found in the two Hungarian partridges ranged from 0.062 to 0.064 parts per million (ppm), which is below concentrations that would prompt federal health officials to prevent commercial sale of a food item intended for human consumption. The current Environmental Protection Agency (EPA) action level for heptachlor epoxide is 0.3 ppm.

Endrin is a chlorinated hydrocarbon widely used to control cutworms in eastern Montana grain fields before 1982. In 1981, testing of wildlife tissue revealed elevated levels of endrin in resident and migratory game birds, nongame birds, and mammals. Tests also revealed the presence of heptachlor and its derivative, heptachlor epoxide, in the tissue samples.

Heptachlor was applied to seed grain to control wireworm damage. Use of both endrin and heptachlor is banned in Montana.

Since 1981, the DFWP has issued precautionary warnings to sportsmen and others about potential health risks associated with consuming upland game birds and waterfowl. The warnings also included instructions on how to trim and cook the game to minimize health risk.

Weigand said removing similar warnings about pesticide contamination from Montana's waterfowl hunting regulations is also under consideration, but a final decision will not be made until the waterfowl hunting regulations are finalized in September (about the time this magazine goes to press). Waterfowl, which migrate through Montana and winter in southern states and in Mexico, have other opportunities to pick up pesticide residue and are more difficult to monitor than Montana's resident upland bird populations.

Agencies cooperating in the testing efforts include the DFWP, the Montana Departments of Agriculture and Health and Environmental Sciences, the EPA, and the U.S. Fish and Wildlife Service.

BOOK REVIEWS

M IS FOR MONTANA, by Gayle Corbett Shirley, illustrated by Constance Rummel Bergum, ABC Press, 842 Sixth Avenue, Helena, MT 59601; 1988, pages unnumbered, $7.95, soft cover.

Kudos for two Helena, Montana, women who have put together a delightful book for younger children. Combining colorful painting with verse, each large page is devoted to one letter of the alphabet.

Shirley and Bergum have this to say about their well-executed effort: "There are many books aimed at teaching children the alphabet. Although this book may be useful in that respect, our goal was unique. We wanted to introduce young children to the riches of Montana and to help them better understand the environment in which they live. With this goal in mind, we believe 'M is for Montana' is appropriate for preschool and young school children alike."

This talented team has met its goal.

Books can be inexpensive, lasting gifts. I frequently take books given me as a child from the shelf and share them with my two boys. I find myself enjoying them all over again. I wholeheartedly recommend this treasure for those children important in your life. It's a keeper!—*Donita Sexton, art director*

BUD LILLY'S GUIDE TO WESTERN FLY FISHING, by Bud Lilly and Paul Schullery, illustrated by Lee Stroncek, Nick Lyons Books, 31 West 21st Street, New York, NY 10010; 1987, 192 pages, $12.95, soft cover.

Bud Lilly, one of the West's most knowledgeable outfitters and for many years the proprietor of Bud Lilly's Trout Shop in West Yellowstone, has teamed up with author Paul Schullery to produce a practical and easy-to-read guide to fly fishing in the Rocky Mountain West. The beauty of this book, aside from the authors' obvious love for the country and its fish and wildlife, is its simplicity: It's one of the few "how-to's" on fly fishing that doesn't load you down with so much entomology and technical jargon that you're exhausted even before you begin your trip. Fly fishing doesn't have to be all that intimidating, and it's nice to hear someone like Bud Lilly, who has had 50 years of experience as a fisherman, say so.

Lilly is a natural story teller, and the chapters on western flies, tackle, techniques, float fishing, and fishing in the various seasons are liberally spiced with personal reminiscences. Schullery, a naturalist-author and expert fisherman in his own right, stays in the background, but his deft skills as a writer are evident throughout this useful and refreshing introduction to western fly fishing.

Sections are included on fishing manners, catch-and-release fishing, and "guides and guidance," the latter a discussion of what to expect from a guided trip, the guide-client relationship, and a glimpse into the life and livelihood of a fishing guide.

A chapter called "The Well-Rounded Angler" points out there is much more to western fishing than simply catching fish. It is the country itself—the scenery, the wildlife, the climate, and the many intangibles that the authors refer to as "the total experience"—that combine to make a western fly fishing trip a memorable experience.—*Dave Books*

TRUTH, LIES & OTHERWISE, by Carl "Skinny" Rowland, 45 pages, $5, available from the author; Basin, MT 59631.

Ever since Izaak Walton took pen in hand and wrote "The Compleat Angler," outdoor literature has made its mark on the recreating public. Roosevelt, Steinbeck, Hemingway, and a host of others often mixed powder with prose, rifles with rhyme, and text with trout to recount their adventures afield. And today, be it in one of the major outdoor magazines or in the more "cultured" literary sporting journals, tales are still told about the big buck, the great hunt, or the perennial favorite, "The One That Got Away."

Although not claiming the credentials or status of the aforementioned "outdoor literati," Basin outdoorsman/poet Skinny Rowland has produced a book of rhymes about some of his experiences outdoors and the people he has encountered in his 62 years in the West. In the process, Skinny has done a good job of putting to verse the things that anyone who has spent any time pursuing trophy trout, bigger bucks, or wily wapiti has either seen or (for those with the audacity to claim it) experienced. Take, for example, Skinny's:

The Big One

Now in Montana's Big Hole, is where I made fishing history,
and how you could've missed this tale, to me sure is a mystery.
But in a secret spot I know, one day I cast my line.
Something grabbed the bait and ran, it made my reel whine.
The pole bent double. The line it snapped, I fought to hold my ground,
and then I seen that mighty splash, and my heart began to pound.
It was right there on that spot, that I became a firm believer,
that even a calm guy like myself, can catch the fishing fever.
So I got myself a bigger pole and all, again he was the winner.
Well things kept going, till I was down to my last hope,
which was a king sized derrick hook, on a three inch nylon rope.
I dallied around a great big tree, and tied to one just like it,
then tossed the hook into the hole, and watched that bugger strike it.
I know I had him hooked for good, but he gave it his best try;
the water churned like a tidal wave, and the hole was near splashed dry.
Then in one great mighty effort, he made his final gallant stand;
he made a jump you won't believe, but came down on hard dry land. I can't tell you what
his weight was, he was too big for any scale,
but you can rest assured men, he outweighed the largest whale.
Once there was a feller, who claimed he caught the record weight.
Well it was a fish the size of his, that was on my hook for bait.
No one has caught one bigger, I'll bet you all a buck;
it took a fleet of forklifts, just to get it on the truck.
I know there are a few of you, who might think this is a spoof,
but I have a photograph, I took to furnish proof.
I haven't got it with me, but I'll swear the truth abounds,
that fish it was so doggone big, the picture weighs ten pounds.

So as not to give the impression that all Skinny knows are "facts," a number of his poems are about his home and Montana, such as:

Days of Wood and Rawhide

Now a long, long time ago, away way back in years,
Montana state was settled by determined pioneers,
As men fought and struggled to cross the Great Divide,
every hardship was endured, by the woman at their side.
As covered wagons inched along over rocky mountain passes,
each hope and fear was shared, by these brave, unselfish lasses.
Men and wives shared common dreams of what these trials would give,
just a place to call their own, and the right to work and live.
Now the trail's end was not a place of riches and great glory,
it simply meant a homestead in the Montana territory.
The homes were made of handhewn logs, fireplaces furnished heat,
tallow candles furnished light, the food was wild meat.
Furs and buckskins made new clothes, with rawhide used for thread,
old ways and means were left behind with new ones in their stead.
They had to start right out from scratch in a new and wild land,
and build a brand new life to live with what they found at hand.
Though the days of work and rawhide and black powder are now gone,
and the pioneers are but a legend, what they left us still lives on.
Their names may be forgotten, but not the fruits of their endeavor,
for they built and left Montana, and Montana is forever.

"Truth, Lies & Otherwise" is a fine collection of poems that almost everyone can find a common point with. The book makes a nice gift or, better yet, a handy reference on one of those nights when gathered 'round the table and talking about how good/bad last year's hunting/fishing (choose one or all) was. Good western poetry, clever images of the old days, and some great tales based firmly on a slim foundation of fact.—*Michael Korn, director, Montana Folklife Project*

Clutter Got You Behind the Old Eight Ball???

Stack 'em up in a MONTANA OUTDOORS binder—and start all over with a clean slate.

One binder holds six issues. To order yours, send $6 (includes postage) to: MONTANA OUTDOORS, Department of Fish, Wildlife and Parks, 930 Custer Avenue West; Helena, MT 59620.

HOW'RE THE DEER DOIN'?

by Charles Eustace

If there is one late night hunting camp topic that draws up more memories than good ol' Aunt Sally's piping hot curried milkweed casserole, it's "How're the deer doin'?" Memory has a habit of being partial to the good times, however—no small factor when it comes to dulling our recollections concerning the ample side effects of Aunt Sally's casserole. Memories of good times assure that future deer hunting stories around campfires will be liberally sprinkled with recollections from the 1980s. For in south-central Montana, deer are doing well over most of their range (over "most," I say, because deer fortunes ebb and flow. Some favorite old haunts may not be so hot anymore, while others have taken on a new luster).

This ebb and flow of deer in south-central Montana (which for our discus-

Mule deer photo: CONRAD ROWE

sion is the same as Department of Fish, Wildlife and Parks administrative Region 5, with headquarters in Billings) becomes apparent by looking at deer fortunes over time. In Montana, the journals of Meriwether Lewis and William Clark take us back as far in time as we can go with reliable records. Lewis and Clark imply that river bottoms were the stronghold of whitetails, while mule deer occupied upland breaks and prairies. A journal entry, dated Tuesday, March 11, 1806, states: "The mule deer we have never found except in rough country; they prefer the open grounds and are seldom found in the wood lands near the river; when they are met with in the wood lands or river bottoms and pursued, they immediately run to the hills or open country as the elk do, the contrary happens with the common deer." The "common deer" was the whitetail Lewis and Clark were familiar with in the eastern states. They observed the whitetail along river bottoms, although they were most abundant on the Missouri near Three Forks, and from Fort Benton downstream. Their only mention of whitetails on the Yellowstone was on its lower reaches, near the junction with the Missouri River.

Osborne Russell, who recorded his Montana wanderings during the 1830s and '40s in "Journal of a Trapper," wrote of the mule deer, "...it lives among the mountains and seldom descends among the plains." Russell's travels were generally from the Yellowstone River south into Wyoming.

The scarcity of deer along the Yellowstone River was likely due to lack of the dense shrubby cover associated with river bottom deer habitat. Lewis and Clark frequently mentioned elk and buffalo along the Yellowstone, two species which not only provided deer with stiff competition for food, but also were capable of altering the habitat. Russell, in writing about portions of the Yellowstone and Clark's Fork of the Yellowstone, noted, "The bottoms along these rivers are heavily timbered with sweet cottonwood and our horses and mules are very fond of the bark which we strip from the limbs and give them every night as the Buffaloe have entirely destroyed the grass throughout

Figure 1

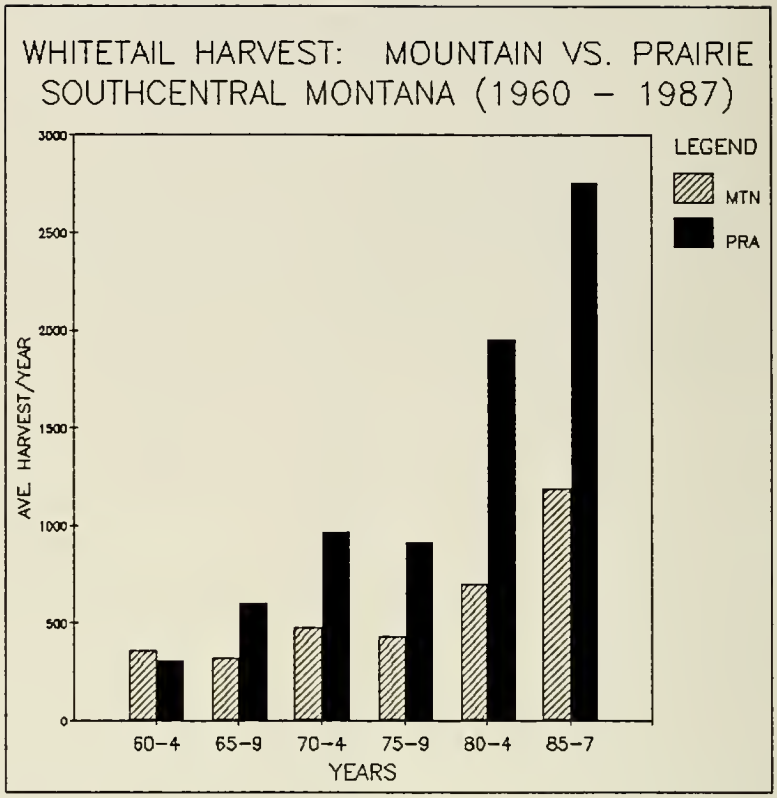
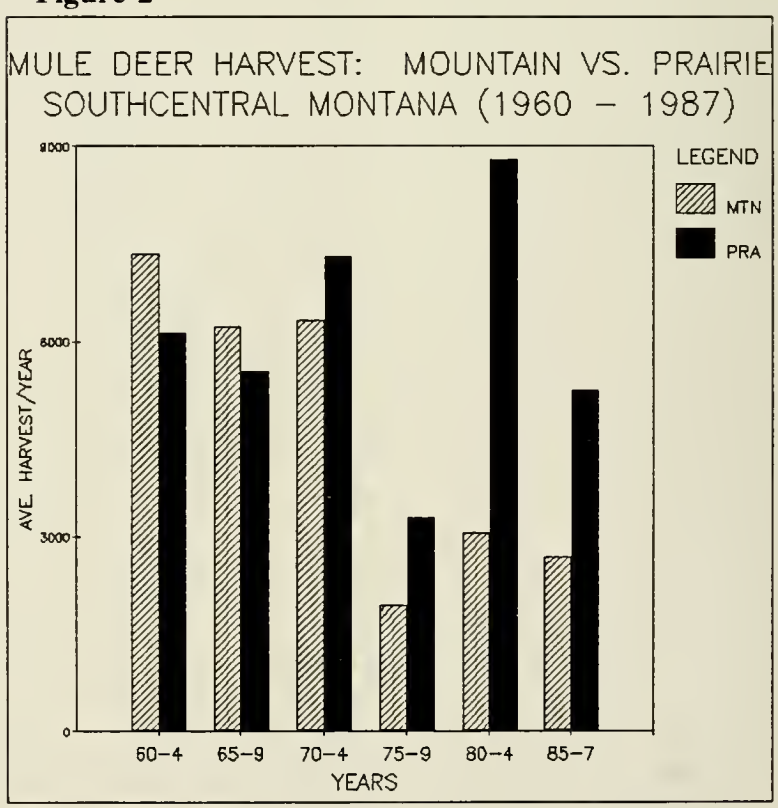


Figure 2



this part of the country." The "sweet cottonwood" to which Russell referred was likely young cottonwood, as the bark of mature cottonwoods could hardly be considered high cuisine for anything short of a pulp mill.

In writing about their winter camp on the Yellowstone, Russell noted it was clear of underbrush, no doubt also due to buffalo. These comments are significant when we consider them in light of his experiences on the smaller tributaries of the Yellowstone where he commented on the dense cover which more than once produced a grizzly bear at disagreeably close quarters. On one occasion, he found himself within 15 feet of an Indian village before realizing it was there. Other explorers noted whitetails on tributaries of the Yellowstone such as the Rosebud, probably in association with woody draws.

From these records, we can generalize that in the early 1800s, whitetails were found along a number of the major rivers and tributaries where there was good woody habitat, while mule deer concentrated in the open prairie, foothills, and mountains, at least in central and south-central Montana. Admittedly, these observations are not always precise concerning the number, kind, and location of deer. But, with all due respect to early explorers, they were more interested in keeping their own numbers intact than in conducting deer surveys. That they were able to do this and still write historic and informative journals is tribute enough.

As time passed, settlers grew less concerned about keeping their numbers intact, but deer census methods didn't get a whole lot better. In researching historical mule deer population trends for "Game Management in Montana," Joe Egan, former assistant administrator of the DFWP Wildlife Division, noted periods of relative abundance in the 1880s, early 1900s, and late 1920s. The early subsistence hunting of miners, loggers, homesteaders, and just about anyone else who liked to eat regularly, along with the drought of the 1930s, finally took their toll. During the '30s and early '40s, mule deer and hens' teeth occurred with equal frequency, except in portions of western Montana where mule deer were relatively plentiful. By the 1950s, mule deer once again were found statewide.

Whitetails apparently suffered a similar fate. By the late 1930s, they were found principally in northwestern Montana or along portions of the Missouri, Milk, and Musselshell rivers and a few tributaries in eastern Montana.

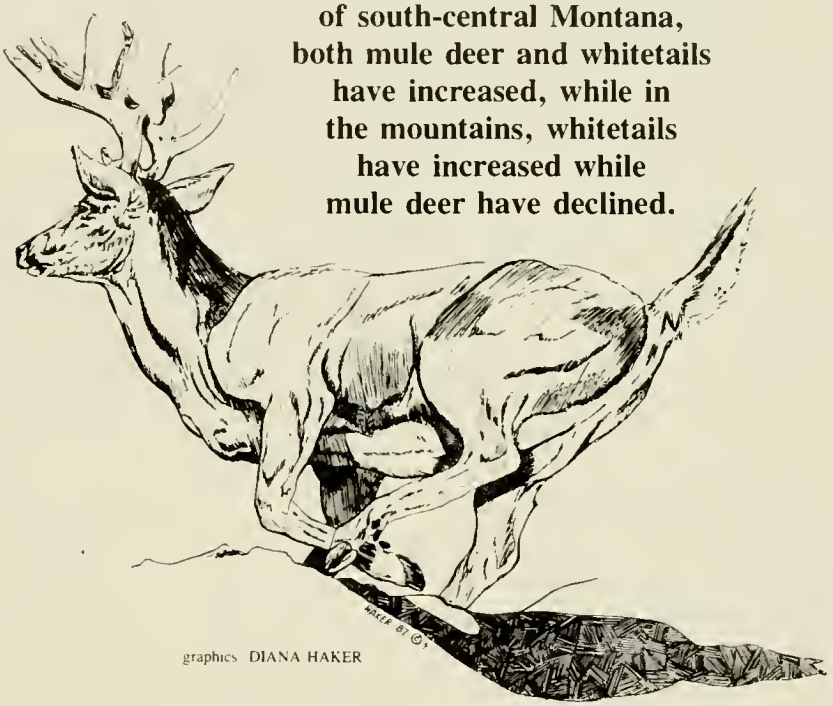
The fact that changes have occurred in whitetail and mule deer numbers and distribution over time is reasonably well documented. These changes continue today, and wildlife biologists monitor them with considerable interest. Current information on whitetail and mule deer numbers and distribution in south-central Montana is based on personal observations, game harvest trends, and aerial surveys.

Personal observations of farmers, ranchers, and hunters indicate that whitetails were seen for the first time in recent history along portions of the Yellowstone River during the late 1940s and early '50s.

Game harvest survey techniques were improving throughout this period and by 1960, they allowed accurate harvest estimates on a region-by-region basis. These surveys indicate that hunters in south-central Montana took an average of 750 whitetails per year during the '60s, 1,400 per year during the '70s, and, to date, 3,250 per year during the '80s. In breaking the whitetail harvest survey results down into five-year periods, as shown in Figure 1, it is apparent that harvest trends progressed upward moderately until the '80s, when harvests showed a sizable increase. The most dramatic change came on the prairie, where yearly whitetail harvest rates for the '80s are 390% greater than they were for the '60s. Although less dramatic, harvest rates in mountain hunting districts increased by 160% over the same period.

Increases in whitetail numbers have been accompanied by declines in mule deer numbers in certain locations. Landowners witnessing the whitetail invasion along river bottoms say that what once seemed to be the stronghold of the mule deer is now the domain of the whitetail. In these areas, the mule deer is in the minority, if it occurs at all. If we can trust history, however, the

Has time smiled on whitetail fortunes while raining on the mule deer's parade? Yes and no. On the prairies of south-central Montana, both mule deer and whitetails have increased, while in the mountains, whitetails have increased while mule deer have declined.



graphics DIANA HAKER

river bottom apparently belonged to the whitetail all along, and was only occupied by mule deer when whitetails temporarily faded out of the picture, or until suitable cover had a chance to develop.

Has time smiled on whitetail fortunes while raining on the mule deer's parade? Yes, and no. In looking at mule deer fortunes in Figure 2, we see substantial changes in harvest figures, as we did for whitetails, but the ebb and flow takes on a cyclic appearance, particularly on the prairie. Harvest for the first half of each decade exceeds harvest for the last half. In addition, each succeeding peak for prairie habitats has been higher than the previous peak, while the reverse has been true of mountain habitats. Taken as a whole, the mule deer harvest in south-central Montana has declined 15% from the 1960s to the '80s. However, on the prairie—which makes up two-thirds of the 13,900 square miles comprising south-central Montana—the mule deer harvest has increased by 30% since the '60s.

This has happened in the same area and time in which the whitetail harvest has increased by 390%. Although the whitetail increase is far greater than that of the mule deer on a percentage basis, it is close to being the same on a numerical basis. The whitetails started from a lower population figure; thus, any increase in number is going to be a larger *percentage* of increase for the whitetail than for the mule deer. In mountain hunting districts, however, the mule deer harvest has declined 55% since the 1960s.

Further evidence that these changes reflect actual changes in the deer population and not the hunter population is provided through four years of graduate studies done by Alan Wood in southeastern Montana. Wood showed quite convincingly that in prairie habitat, the number of bucks taken by hunters is a direct reflection of the number of bucks present going into the hunting season, not the number of hunters. In the prairie areas of south-central Montana, the mule deer and whitetail buck harvest has increased by 59% since the 1960s, while the number of hunters has increased by 60%. Hunter success for bucks was 47%, both during the 1960s and the '80s. Since hunter success is a good indicator of the number of deer with respect to the number of hunters, it indicates that deer and hunter numbers have pretty well kept pace with each other in prairie hunting districts. Evidence which points to increases in other prairie game populations in south-central Montana includes antelope census information, which shows an increase of 150% in total antelope numbers from the '60s to the '80s. Sage grouse check station results, which go back to 1952, show steadily increasing peak harvests on opening weekend of 1.4, 1.6, 1.7, and 2.0 birds per hunter in 1955, 1963, 1975, and 1983, respectively. For whatever reason, the prairie has been in an increasingly productive phase for the past 30 years.

Buck kills in the mountain hunting districts of south-central Montana have dropped 41% since the 1960s, while hunter numbers have dropped 40%. Here again, hunter success has remained quite constant, 51% in the '60s, versus 49% in the '80s. If deer populations had remained level, a 40% drop in hunter numbers should have made a buck easier to find and hunter success should have increased. Since mountain whitetail harvest figures are up 160% since the '60s, the decline in the mountain buck harvest can be attributed solely to mule deer.

In short, all deer have been increasing in recent years in south-central Montana with the exception of mule deer in the mountains whose populations are only about half what they used to be. Why is that?

While the reader would no doubt prefer a single answer, changes in deer populations are the result of a number of changes in the deer's environment. And, the relative importance of any single factor is difficult to measure. The subsistence hunting of Montana's early days is a thing of the past. In my opinion, introduction of agricultural crops into prairie areas is beneficial, up to a point. Agricultural crops in prairie habitat add diversity and provide forage that can be seasonally superior to native forage. Improved livestock grazing systems which emphasize developing better range vegetation conditions also can benefit wildlife. Increased abundance and distribution of shrubs and woody cover, particularly along stream bottoms, is very important.

Moisture, an important factor to fawn survival, is somewhat of a puzzle. Moisture is important in two ways: first, animals need water to drink and second, forage requires water to grow. Ken Hamlin, a DFWP deer research biologist, used tree ring growth information from the Missouri River Breaks to develop a general reflection of precipitation trends since 1580. These trends indicate that the period from 1930 to the present has generally been drier than any time since 1680. A few years in the 1970s were quite favorable and a number of years since 1930 have been "normal." But, the majority of the years appear below normal from an historical perspective. However, this dry period may also reflect mild winters and less than usual snowfall, which would favor fawn survival. Another factor which may fit here and would alter some of the effects of low precipitation is the vast number of stock water reservoirs that dot the prairie. While a reservoir won't turn poverty flats into the Portals of Eden, deer find the best of habitats poor fare without water.

Biologists' increased understanding of game populations and what makes them tick, plus improved law enforcement capabilities, have played a part. While the list no doubt goes on, I believe the above represent some of the important factors that have affected deer populations.

What about the mountain mule deer? Why have populations decreased? Mountain mule deer may be more sensitive to overhunting and natural catastrophe than prairie mule deer. Fawns have lower survival rates in the mountains than on the prairie, resulting in fewer years when a surplus of young deer are available to expand the population. Lower fawn survival coupled with lower dispersal rates no doubt makes recovery from population lows a more time-consuming process for mountain mule deer.

The highest recorded hunter harvests

for mountain mule deer came in the first half of the 1960s. Harvests declined moderately through the first half of the '70s and then, due to factors as yet unknown to deer biologists, dropped out of sight along with most mule deer populations in the western United States. A slight upturn in harvests occurred in the first half of the 1980s.

I believe changes in habitat through forest succession have played a role. Today's improved fire control practices have reduced the size and frequency of fires. Historically, wildfires created openings in the forest that stimulated growth of forage plants beneficial to deer. In general, these earlier stages of forest succession were more common 75 years ago than they are today. All habitat, however, is not improved by the match, nor by its modern equivalent, the double-bit ax. Some mature timber stands—particularly Douglas-fir—support high densities of mule deer on both summer and winter range.

Competition, too, has affected mountain mule deer populations. Elk numbers have grown steadily over the past two decades, creating competition for space and food. Mountain lions compete in a different way: They use mule deer for food. From 1971 through 1979, 36 mountain lions were taken by sport hunters or predator control agents in south-central Montana. Since 1980, 88 mountain lions have been taken in the same manner, suggesting a growing lion population. Although lions may not be very handy at controlling a deer population, they can certainly slow down the recovery of a deer population fallen on hard times. A mountain lion population on the rise before the mule deer population crashed hasn't helped the mule deer recovery.

The fact that mountain lions are not particularly good at controlling a deer population is shown by the increasing numbers and distribution of whitetails in mountain hunting districts. It's not that lions have an aversion to whitetails, as Shawn Stewart, DFWP wildlife biologist based in Red Lodge, found out last winter. While live-trapping whitetails for a population study, Stewart also noted a keen interest in his study by local lions. He had to stop trapping operations in several areas because the lions, which were also checking the traps, rendered several whitetails unsuitable for further study.

MIKE LOGAN

Why then have whitetails continued to increase in mountain hunting districts? Again, there are probably a number of reasons. One influence is the habitat they occupy; stream bottom habitat in the mountains and foothills on the fringe of the mountains offers diverse, lush vegetation. Another factor is good fawn survival—it, too, reflects the quality of the habitat. Yet another possibility is that the stages of forest succession predominating today are more favorable to whitetails than to mule deer.

Although we are far from determining with certainty why some deer populations thrive while others struggle along, it will give hunters something to talk about while they sit around the campfire. And it might just take their minds off good ol' Aunt Sally's piping hot curried milkweed casserole.■

In the mountain hunting districts of south-central Montana, whitetail harvest is up 160% since the 1960s. And landowners witnessing the whitetail invasion along river bottoms say that what once seemed to be the stronghold of the mule deer is now the domain of the whitetail.

CONTRIBUTORS

• If you work for "Fish 'n' Game," you've been asked, "How're the Deer Doin'?" **Charles Eustace** has the answer, at least for south-central Montana: "Taken as a whole," he writes, "the mule deer harvest in south-central Montana has declined 15% from the 1960s to the '80s. However, on the prairie—which makes up two-thirds of the 13,900 square miles comprising south-central Montana—the mule deer harvest has increased by 30% since the '60s." What about whitetails? For the first time in recent history, whitetails were observed along the Yellowstone River during the late 1940s and '50s. Harvest figures for whitetails showed a sizable increase in the '80s, and the most dramatic change came on the prairie, where yearly whitetail harvest rates for the '80s are 390% greater than they were for the '60s. Although less dramatic, harvest rates for whitetails in mountain hunting districts increased by 160% over the same period. Eustace is good at taking numbers such as these and making sense of them. Turn to his article on page 11. He is the wildlife manager for Region 5 (Billings).

* * * * *

• The long, graceful white coat is distinctive. So it's not hard to tell a mountain goat from an elk. But identifying the sex and age of "Montana Mountain Goats" is sometimes tricky. Turn to page 17 and a pull-out pamphlet, compiled by **Gayle Joslin**, for some tips on field identification and information about goat management, life history, distribution, food habits, and many other facts. Using her words along with the drawings that accompany the section, you should be able to determine the sex and relative age of just about any goat you might spot. Joslin is the Helena area wildlife biologist, and she has worked for the Department of Fish, Wildlife and Parks for 12 years.

* * * * *

• "Gramps never turned down a would-be hunter who asked permission and was courteous," **Warren Wintrode** tells us. But he also notes he grew up where hunting was for birds only, not big game, and it's a different story in Montana where the spots best for upland game birds are also often home to deer and antelope. He urges getting up your courage to ask if you can bird hunt on posted land. He suggests the results are often pleasantly surprising, and as he concludes, "In fact, your faith in human nature as a whole might be renewed." Wintrode works for Associated Press in Helena; when news is slow, outdoors activities such as fishing and hunting fill in the gaps. Turn to "Courtesy Is the Key" on page 21; it's another in our "Perspectives" series.

• Special illustration was prepared for Warren Wintrode's article by **Diane Nugent**, Butte. This versatile artist has been featured frequently in *Montana Outdoors*. Her work ranges from the humorous (such as the illustration in this issue) to the realistic, from wildlife to commissioned portraits, from detailed pen-and-ink drawings to free-flowing watercolors. She works from her studio at 2214 Ottawa; Butte, MT 59701 (406/782-5255).

* * * * *

• "A New Season for the Elkhorns" came about because hunters were concerned that the opportunity to harvest bigger bulls was diminishing, and biologists were concerned that the scarcity of big bulls was affecting calf production. As **Rich DeSimone** outlines, under the new regulations, hunters may harvest spike bulls at any time during the general season, but older bulls may be harvested by permit only (50 branch-antlered bull permits were available, by drawing, for 1987). DeSimone further reports an unexpected bonus: the satisfaction of hunters who reported rewarding hunts simply from encountering a big bull. DeSimone is a biologist for the DFWP; he assisted the U.S. Forest Service in developing a Wildlife Management Unit in the Elkhorns. His article starts on page 22.

• A list of **Robert Neaves'** artistic achievements could easily fill the rest of this column, if not the entire page. To the joy of *MO*'s readers, his work has appeared in our pages many, many times. This issue's contribution, "January Thaw," features five elk in high, snowy country, and it's typical of the Neaves trademark of wildlife in its natural environment. It is available as a limited edition print. Neaves' recent exhibitions include the Iowa Wildlife and Western Festival in Des Moines (at which he was the featured Western artist) and the National Ducks Unlimited Wildlife Show in Kansas City. For more information about his work, contact him at Robert Neaves Studio, 109 South Fourth; Hamilton, MT 59840 (406/363-3292).

* * * * *

• It's a program to teach teachers how to teach kids about natural wonders and it's "WILD and Growing." Project WILD workshops have attracted more than 160,000 educators from the United States and Canada since the program began in 1983. **Cheryl Charles** is Project WILD's national director and she also wrote *MO*'s article about it. As she writes, "Project WILD's goal is to assist learners of any age in developing awareness, knowledge, skills, and commitment to result in informed decisions, responsible behavior, and constructive actions concerning wildlife and the environment upon which all life depends." Her article begins on page 31, and it also includes an *MO* interview with Vince Yannone, one of Montana's two Project WILD chairmen.

* * * * *

• *MO* is pleased to feature another piece of art by the winner of the 1988 waterfowl stamp competition. That the stamp featured a mallard hen and her brood and that this issue's back cover features an elk looking as though he's quite ready to bugle is tribute to **Dave Samuelson's** diversity. Although he's been an artist all of his life, he didn't begin "serious" painting until six or seven years ago. He works from his home studio in Missoula (4413 South Seventh West; Missoula, MT 59801 [406/728-0993]). Samuelson's work has also appeared in *Bugle* magazine and it is in increasing demand from collectors.

* * * * *

• *MO* wishes to thank the following photographers for their contributions to this issue: **Pete** and **Alice Bengeyfield**, Dillon; **Kristi DuBois**, **Alan G. Nelson**, and **Conrad Rowe**, Great Falls; **Gary D. Holmes**, Lolo; **Louis M. Kis**, Kalispell; and **Spencer Sartorius** and **Mike Logan**, Helena.

MONTANA MOUNTAIN GOATS

(Oreamnos americanus)

KRISTI DUBOIS

Adult male

Tips on Field Identification

The following information concerning physical and behavioral traits of male, female, and juvenile mountain goats is designed to assist the wildlife watcher and hunter in determining the sex and relative age of mountain goats. This article is designed to be removed from *Montana Outdoors*, folded into a pamphlet, and taken to the field on mountain goat scouting adventures. It will help shape your appreciation and perception of mountain goat ecology and aid you in classifying goats in the field.

Mountain Goat Management

Appreciation of the needs of mountain goats is the key to their healthy survival. The future of mountain goats in Montana depends on how they are regarded in today's world, and how their habitat is managed. In most states and provinces which support mountain goats, past declines in populations have signaled the need for a better understanding of the species and development of management strategies specifically suited to mountain goats. Two human factors that can result in declines in goat populations are habitat disturbance and illegal or poorly regulated hunting. Since appreciation grows from understanding, knowledge of this mysterious beast—which seems to live among the rocks and clouds—is basic to managing for its needs. Mountain goats become susceptible to declines if inordinate hunting pressure occurs on local herds, if adult females comprise the majority of harvest from an area, or if roads penetrate mountain goat habitat. The hunter can do a great deal to alleviate these problems by selectively harvesting adult males, as can the mountain goat enthusiast in general by championing the importance of delicate mountain goat terrain. Identifying individual mountain goats in the field can be a difficult task; enabling you to do so in their rough world is the focus of this pamphlet.

Life History

The mountain goat occurs only in North America. It is the only genus and species of its kind in the world. Its closest relatives are the chamois of Europe and the goral and serow of Asia. The domestic goat is not closely related to the mountain goat. At birth, kids stand about 13 inches (33cm) at the shoulder and weigh 5 to 7 pounds (2 to 3kg). Yearlings average about 45 pounds (20kg) and 2-year-olds about 55 pounds (26kg). Mountain goats continue to grow through their fourth year, achieving average weights of 125 to 155 pounds (56 to 70kg) for females and 135 to 180 pounds (61 to 81kg) for males.

The breeding season occurs from mid-November through early December. Females do not breed until 2 1/2 years. After a gestation period of six months, kids are born in late May or early June. Kids closely follow their mothers for the first year, relying on them to expose winter forage under deep snow.

PETE & ALICE BENGEYFIELD

Adult female and kid

Adult females rank highest in the social order. By association, kids also assume the superior status of their mothers who vigorously defend them until the kids are 1 year old. Yearlings drop to the bottom of the pecking order and are forced to forage last in areas pawed out by other goats. Kid and yearling survival may be less than 50%, depending on the winter's severity. Mountain goats have one of the highest natural mortality rates among big game animals due to the dangerous terrain and hostile climate in which they live. But if goats survive the juvenile years, they normally live from 10 to 13 years.

folding instructions

Juvenile mountain goats learn a number of lessons from adult females, including how to safely use their range, how to move from one precipitous cliff dwelling to another, when to make seasonal migrations, the location of strategic feeding and bedding sites, how to safely approach mineral licks which may occur away from escape terrain, where to find shelter in a storm, and where to cross snow-laden slopes. So, in addition to maintaining the herd through offspring, adult females are reservoirs of tradition and knowledge. Loss of an adult female from the population therefore constitutes more than simply the loss of a single mountain goat.

Distribution

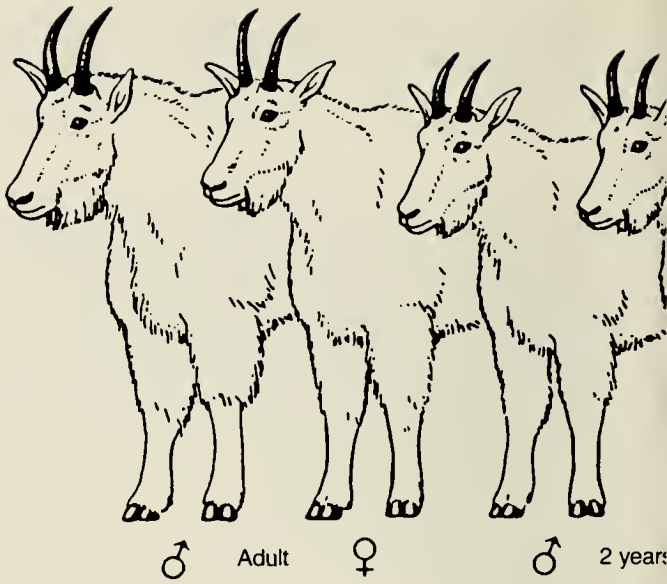
Mountain goats occur only in northwestern North America. In Montana, they are native west of the Continental Divide and have been introduced into several mountain ranges east of the divide. Although goats do not typically venture far from cliffs and broken terrain which provide escape cover from predators, they use dense timber and creek bottoms for security and thermal cover against extreme heat, cold, and wind. Within their range, mountain goats may be found at any elevation or exposure at any time of year. Goats west of the Continental Divide generally move down in winter to steep cliffs with good snow-shedding properties; east of the divide, goats move up to windswept ridges to feed on exposed forage.

Distribution of mountain goats in Montana

Food Habits

It may seem as though mountain goats eat "anything" because of the variety in their diet. They are, in fact, discriminating snippers particular about the portion of the plant on which they feed (as compared with mountain sheep). Goats select the most digestible parts of individual plants when that opportunity exists during spring, summer, and fall. During these seasons, goats feed on forbs, grasses, and shrubs. But unlike many ungulates, a goat's first choice for habitat is not motivated by food, but rather by its need for security. So while protective terrain may offer little in the way of dietary variety and quantity, the goat selects what is best for it to eat at the moment of feeding.

During winter, forage is likely limited. Mountain goats initiate winter feeding bouts by filling their rumens with needles, twigs, and branches of conifers. Once the hunger pangs are allayed, they then paw for more nutritious fare in the form of dried grasses and shrubs, or dig for roots and tubers, or even climb into lower tree limbs to nibble on lichens.

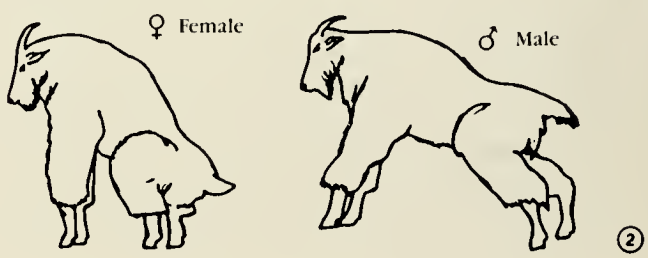


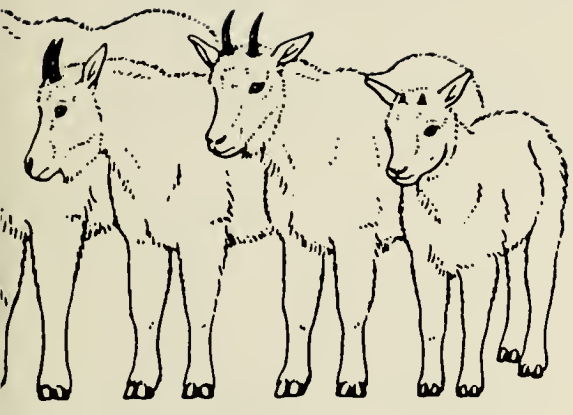
The high water content and chemical composition of growing spring forage creates a sodium imbalance in the physiology of mountain goats which compels them to search out mineral licks. They frequent mineral licks during May, June, and July, but may visit them during any month of the year. Such sites are usually reliable spots in which to observe goats during early summer.

Group Composition

Female-juvenile (nursery) groups may range in size from two to well over a dozen mountain goats in native populations on and west of the Continental Divide. In some introduced populations east of the divide, groups of up to 50 goats sometimes can be observed. Large groups will generally be seen during early summer when goats congregate on prime feeding grounds or on mineral licks. As summer progresses and the vegetation dries out, group size diminishes. Although juveniles are normally found in the company of adult females, a goat of any age or sex may be alone, so careful scrutiny is required to determine its status.

By age 2, males begin to disassociate themselves from the nursery groups. Adult males generally lead solitary existences. Outside of the mating season, they tend to associate primarily with other males. Females normally inhabit the most desirable cliffs, which are often more visible and accessible





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than areas frequented by males. From late October to mid-December, males seek out females, so both sexes can be found together at this time.

Urination Posture

Probably the most accurate indicator of a mountain goat's sex is urination posture. The male stretches forward with his front legs while keeping his hind legs stationary. The female stands in place, sometimes moving her hind legs apart, then squats to situate her rump closer to the ground.

At close range, when goats still have their summer coats, the genitalia may be observed. By autumn, however, the winter coat generally obscures the scrotum, but the black vulval patch of the female is visible when the tail is raised, regardless of coat length.

Pelage

Composed of a fine, thick under layer of very soft fur and an outer, longer layer of guard hairs, the white coat (pelage) of the mountain goat is one of the most beautiful in North America. (Among hooved mammals, only the Dall sheep shares the distinction of a pure white cape.) By December, it has reached maximum length; it is shed annually in the summer. Average maximum length of guard hairs on portions of the body is 6 to 8 inches (15 to 20cm). Males tend to have more pronounced beards and pantaloons and longer hair over the top of the shoulders.

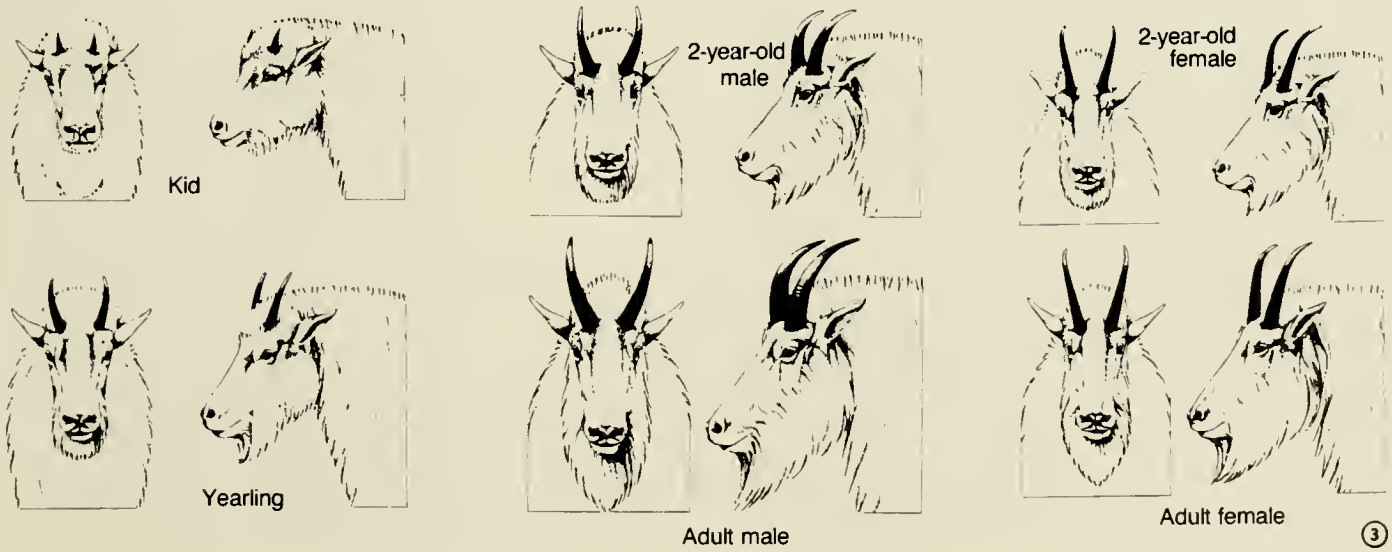
By mid-November, the mountain goat's beard becomes a subtle indicator of age. The adult's full beard extends the full length of the face and may reach 4.5 to 6.7 inches (11.4 to 17.1cm) in length, while younger animals have progressively shorter, thinner beards. The full beard of the adult gives the face a wider appearance. In comparison, a yearling's beard seems to be confined to the chin and is from 2.2 to 3 inches (5.6 to 7.6cm) in length.

Males characteristically dig rutting pits as the breeding season approaches. Pawing the ground until a depression is created, the male urinates in the pit, then lies in the moist dirt, often throwing loosened soil backward with his front feet, over his flanks. This results in a soiled coat, particularly around the knees and flanks. Females occasionally indulge in similar behavior, so a dirty coat is not a foolproof indication of a goat's sex. A taxidermist can transform a soiled coat into a beautiful white cape, so hunters should not be discouraged by the dingy color of a goat's pelage in the field.

Body Size and Configuration

Body size differences between male and female goats less than 3 years of age cannot be easily distinguished in the field. In animals 3 years of age and older, males are usually larger than females, standing 3 to 6 inches (7 to 15cm) higher at the shoulder and slightly longer in body length. Full body size is not reached until 4 or 5 years of age.

Muscular development of the males' shoulders and the depth of the chest is greater than that of females. Subtle facial



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features may include a more angular appearance in males, although 1- and 2-year-olds retain a blocky appearance due to the shorter snout typical of juveniles.

With careful observation, the length of the rostrum (snout from the inside corner of the eye to the tip of the nose), and thus the shape of the face, may be used to discern all four age classes. The only area of overlap in rostrum length occurs between 2-year-olds and adults. The rostrum of kid goats averages 4.6 inches (11.7cm); yearlings, 5.5 inches (14cm); 2-year-olds, 6.5 inches (16.5cm); and adult females, 7.2 inches (18.3cm) and adult males, 7.6 inches (19.3cm).

Horns

Both males and females have shiny, black horns which grow from a bony core. Mountain goats do not shed their horns. An increment of growth is added to the horn annually. During the first year, horns continue to grow throughout the winter so a distinct ring is not created, although there is often a ridge or indentation in the horn. The majority of horn growth occurs during the first 2 1/2 years. The age of a goat may be determined by counting the annual growth rings formed each winter except the first year. For example, horns of a 5-year-old goat harvested in the fall will show four visible rings.

The male's horns curve back in a greater, more uniform arc. The female's horns tend to curve more toward the tip, although this feature is variable.

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Horn lengths for adult males average from 9 to 9.25 inches (23 to 23.5cm), and for adult females from 8 to 9 inches (20.3 to 23cm). But depending on the area of the state from which they are taken, adult horn lengths range from 7 to 11.6 inches (17.8 to 29.5cm).

Although the length of a male's horns may not exceed that of a female, circumference of the horn at the base is greater. A careful observer will notice less space between the horns of males than females due in part to the more developed glands at the base of a male's horns. Male basal horn circumference averages from 5.1 to 5.3 inches (13 to 13.5cm), while in females, circumference ranges from 4 to 4.1 inches (10.2 to 10.4cm).

Length of the horn in relation to the ear is one field indicator of age. At 1 year, the ears are about 4.5 inches (11.4cm) long, reaching about 5 inches (12.7cm) in adult males. In yearlings, the horns may equal the length of the ears or exceed them by 1.4 inches (3.6cm). In 2-year-olds, the horn length may exceed the ear length by about 3 inches (7.6cm), or slightly over half again the length of the ear. The horn to ear length ratio in adults is variable, but the horns are usually at least half again as long as the ears, and they may be double the length of the ears. If the horns appear to be full-length, but the nose seems short, the animal is probably a 2-year-old, and other body characteristics should be checked.

Identification Checklist

Use combinations of the following features to classify mountain goats:

- solitary animal or a small group without juveniles (males), compared with a group containing juveniles (adults in such groups are almost always females);
- urination posture;
- facial features and beard length;
- body configuration and size; and
- horn curvature, basal circumference, and length in relation to ear.

Hunters, please avoid harvesting females with kids. Legally, the complete head with horns attached, or the top portion of the skull with horns attached (complete head preferable) must be submitted to a department biologist or game warden for aging within 10 days of the kill. This information is valuable in assessing harvest pressure and trends in mountain goat populations within various areas of the state.—*Gayle Joslin*

Reading List

"A Beast the Color of Winter—the Mountain Goat Observed," by D.H. Chadwick, Sierra Club Books, 1983.

"Mountain Goat," by C.B. Rideout (pp. 149-159), in "Big Game of North America—Ecology and Management," edited by J.L. Schmidt and D.L. Gilbert, Stackpole Books, 1978.

"Criteria for Determining Age and Sex of American Mountain Goats in the Field," by B.L. Smith, *Journal of Mammalogy*, Vol. 69, No. 2, pp. 395-402, 1988.

"Mountain Goat," by R.A. Wigal and V.L. Coggins (pp. 1008-1020), in "Wild Mammals of North America—Biology, Management, Economics," Johns Hopkins University Press, 1982.

Sketch Credits

1, 4—from "A Beast the Color of Winter—the Mountain Goat Observed," by D.H. Chadwick, ©1983 by Douglas H. Chadwick, illustrations by Carla Simmons. Reprinted with permission of Sierra Club Books.

2—"Mountain Goat Ecology-Logging Relationships in the Bunker Creek Drainage of Western Montana," by Douglas H. Chadwick, MS thesis, University of Montana School of Forestry, Missoula. Project No. W-120-R-3,4, 262 pages, 1973.

3—"Criteria for Determining Age and Sex of American Mountain Goats in the Field," by B.L. Smith, *Journal of Mammalogy*, Vol. 69, No. 2, pp. 395-402, 1988.

Courtesy Is The Key

by Warren Wintrode
illustrated by Diane Nugent

The relationship between landowners and hunters isn't always rosy, and sometimes it can get downright nasty.

Landowners get tired of being rousted out of bed before sunrise on cold fall mornings by hunters banging on their doors. They get tired of finding their gates left open and tracks of four-wheel-drive vehicles that chewed up their pastures.

On the other hand, sportsmen get frustrated being told that a landowner won't allow any hunting because 20 years ago some careless gun-toter shot "Bossy."

Or that it's a bad year for birds—even though there are 20 pheasants, two coveys of Huns, and a squadron of sharp-tailed grouse patrolling the field behind the barn.

My grandfather was both a landowner and a hunter during the pheasant-rich era of the 1950s and '60s in South Dakota. He taught me how to hunt. And just as important, he gave me some good advice about the best way to approach landowners in seeking permission to hunt. Gramps never turned down a would-be hunter who asked permission and was courteous.

But the hunting where I grew up was for birds only, not big game. It's a different story in Montana. Because of the habitat, the areas best for upland birds also often are home to deer and antelope. It can be depressing to drive for miles and miles and see nothing but "No Hunting" signs or orange fence posts.

However, through trial and error and just plain asking, I found that many times those signs are intended to dissuade big game hunting, not bird hunting. And every now and then, when you take a chance and get up the courage to ask if you can bird hunt on posted land, the results are pleasantly surprising. In fact, your faith in human nature as a whole might be renewed.

Like last fall, in extreme eastern Montana.

Four of us—including friends from Alaska and South Dakota—decided to meet for a four-day bird hunt. We didn't know any landowners in the area, so we started scouting out the prospects. Driv-

continued on page 30

A New Season for the

A new regulation designed to increase the number of older bulls in the elk population went into effect for the Elkhorn Mountains south of Helena in 1987. All hunters can still harvest spike bulls, but branch-antlered bulls may be taken only by permit. This season is designed to increase the number of big bulls in the population as well as maintain a healthy and productive elk herd.

Light was waning in the eastern sky as I hastened along the trail to be in position and hidden among the tall firs before shooting light. A faint but unmistakable odor of elk drifted on the cool morning breeze. Two cows and two calves grazed below the ragged edge of dark timber on the steep hillside above me. Although a cow permit was tucked securely in my pack, these elk were safely beyond my shooting range.

Later in the day, as I tiptoed through a swampy thicket, I surprised a six-point bull that had been bedded in the heavy cover. Only 30 feet apart, we stood looking at each other—I, marveling at the size of the magnificent animal; he, assessing the danger posed by this unexpected intruder. Suddenly turning, he silently disappeared in the tangle of downfall and brush. This elk had been as safe as the distant cows seen earlier in the morning since I didn't have a branch-antlered bull permit. If a bull were to be my target, he would have to be a spike. But just seeing the big bull at close range had been a thrill.

Similar experiences were recounted by other hunters in the Elkhorns during 1987. For many sportsmen, a six-point bull is the most sought-after trophy. It may seem strange that a hunter could finally come face to face with his dream bull, *not* harvest it, and *still* report a memorable experience. Perhaps because the Elkhorns have had so few big bulls in recent years, just seeing one provided a good story to take home. The satisfaction of hunters who reported rewarding hunts simply from encountering a big bull was a bonus not expected when this new elk regulation went into effect.

The idea for the season in the Elkhorns stemmed partially from concern among hunters that the opportunity to harvest bigger bulls was diminishing, and partially from biologists' fears that the scarcity of big bulls was affecting calf production. Under the new regulation, hunters may harvest spike bulls at any time during the general season, but older bulls by permit only (50 branch-antlered bull permits were available, by drawing, for 1987). Although this new regulation has been in effect for only a short period, it appears to have already increased the overall number of bulls in the herd *and* the number of older and larger ones. The elk herd will be closely monitored in the future to determine if the presence of more older bulls stimu-

Elkhorns

by Rich DeSimone
illustrated by Robert Neaves

lates calf production, which has been lower than the herd's potential in recent years.

Public support for the new regulation continues to grow, although when it was first proposed in 1986, it generated a great deal of debate. Many hunters wondered how a regulation that allows hunters to shoot young bulls could ever result in an increase in older ones. In addition, the season appears to run counter to those in some other hunting districts, where spike bulls are *protected* in an attempt to increase the number of branch-antlered bulls.

The explanation for this seeming contradiction lies in the nature of the Elkhorns elk herd, the terrain it inhabits, and the pressure brought on it during hunting season. Depending on the ruggedness of the country and the number of hunters afield, different elk seasons have different effects on elk populations. The Elkhorns herd is one of the most intensively hunted elk herds in the state. To better understand its unique characteristics and problems, we need to look at the history of the herd, the results of studies that have been carried out in recent years, and the effects of the management strategies that have been tried.

LOUIS M. KIS

Spikes are the most commonly harvested bulls in areas with good access and little security cover under the antlered bull regulation. Because most of the antlered bulls are taken each year in these areas, mature bulls are scarce.

The Elkhorn Mountains Elk Herd

Although little historical information is available on the Elkhorns elk herd, we know from the journals of Lewis and Clark that elk were abundant along the Missouri River, which skirts the eastern boundary of the area. By 1900, however, elk were scarce to non-existent in the Elkhorns, probably owing to the appetite of a growing Helena community.

In 1939, 34 elk from Yellowstone National Park were released near Elkhorn Creek in the southwestern portion of the range. A new herd became established and grew quickly, so that by 1943, limited hunting for fork-horned bulls was allowed. The herd expanded through the 1950s and '60s and, for a time, in addition to the general season for antlered bulls, a few days of either-sex hunting were allowed. The year 1967 marked the end of general either-sex elk hunting in the Elkhorns and the beginning of either-sex permits, which more strictly control harvest of cows and calves. The elk population slowly increased to its present level of about 1,800. The number of antlerless permits has been adjusted periodically to maintain the herd at this level.

The proximity of Helena, Butte, Bozeman, and numerous smaller communities has resulted in a dramatic increase in the number of hunters and in the number of elk harvested in the Elkhorns during the past 25 years. Today, it is one of Montana's most popular hunting areas, and it produces one of the state's highest harvests of elk. From the 1960s to the '80s, the number of elk hunters statewide increased by about 30%, while in the Elkhorns the number increased by over 250%! In fact, approximately 3% of all elk hunters in Montana hunt the Elkhorns. Between the 1960s and '80s, the number of bulls harvested in the Elkhorns increased by more than 200%, while the statewide bull harvest increased by only 40%.

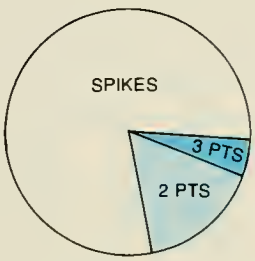
The combination of a large elk herd, good public access (approximately 80% of the area's 200,000 acres is national forest land), and high hunter density has resulted in the Elkhorns having one of Montana's most intensively hunted elk populations. These factors are critical when evaluating how a particular season type affects the elk population and the survival of bulls to older ages. In portions of the state where hunter density is lower or the country more inaccessible or rugged, a given elk season may have a much different effect on the elk population.

Elk Studies

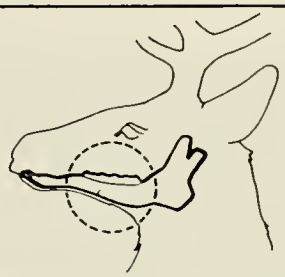
A 10-year-old controversy over natural resource management in the Elkhorns led to efforts in 1982 to gather more detailed elk population information (*Montana Outdoors*, March/April 1985). Following extensive public involvement, in 1982, the U.S. Forest Service (USFS) decided to manage the mountain range primarily for wildlife and allow other resource uses only

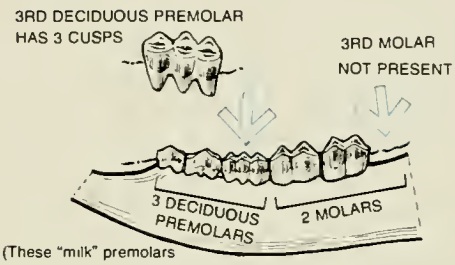
ANTLER GROWTH AND AGES OF BULLS IN THE ELKHORN MOUNTAINS

YEARLINGS



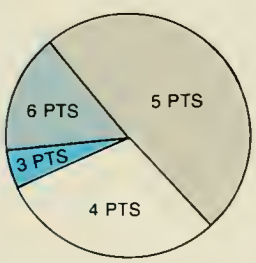
Yearling bulls typically grow spikes their first year, although about 25% of yearling bulls develop branched antlers having two or three points.



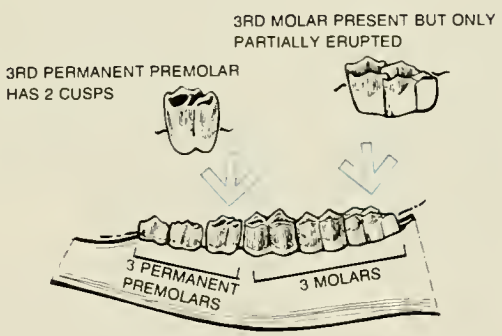


(These "milk" premolars are typically replaced at 24-28 months.)

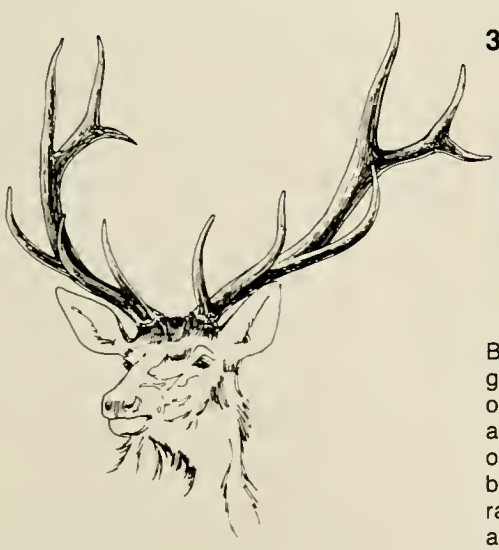
2-YEAR-OLDS



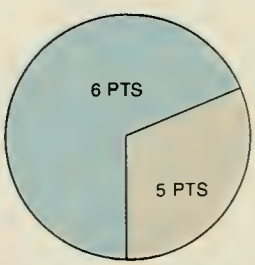
Two-year-olds typically have small antlers with four or five points, but may have as many as six points or as few as three points.



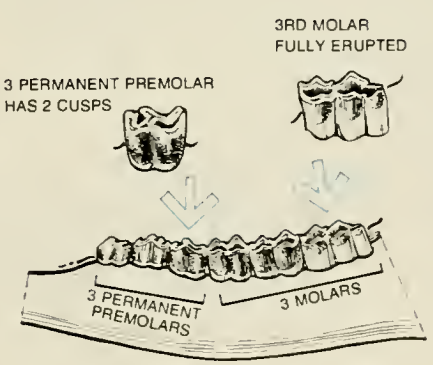
(Premolars are lightly stained or "straw" colored)



3 YEARS AND OLDER



Bulls 3 years old or older generally have six points on at least one antler, although as bulls grow older, antlers tend to become more massive rather than continuing to add points.



ALL TEETH ARE UNIFORMLY STAINED AS BULLS GROW OLDER, TOOTH WEAR CONTINUES

graphics, LEN ECKEL

when compatible with wildlife values. The Elkhorns now constitutes one of the largest areas of national forest land dedicated to wildlife in the United States.

Managing the Elkhorns has been a cooperative effort between the Department of Fish, Wildlife and Parks (DFWP) and the USFS. The commitment of both agencies to long-term wildlife monitoring studies has resulted in a comprehensive base of information. Evaluating the effects of land management activities (prescribed fire, road management, livestock grazing, mining, and logging) on the elk population is part of the wildlife monitoring program. These studies also involve determining how various hunting regulations (antlered bull, branch-antlered bull, and spikes legal/branch-antlered bull permits) affect the elk herd, especially bull survival.

Since 1982, 245 elk have been captured and fitted with color-coded plastic collars containing radio transmitters. Each radio has its own frequency, so that biologists can relocate tagged animals several times a month and plot their distribution and movements. As a result, we have learned how elk "use" the mountain range—how their travels vary from season to season, and which habitats they favor during critical periods, such as the calving and rutting seasons. Since 131 of the 245 radio-collared elk were bulls, the way in which the mountain range is used by male and female elk can be compared. Monitoring the lives and deaths of dozens of radio-marked elk has helped us understand how various elk regulations have affected the bull population.

Antlered Bull Regulation

The antlered bull regulation, which allows hunters to harvest any antlered bull having at least one antler of four or more inches, was in effect in the Elkhorns through 1985. This type of elk season is the most common one in Montana. Since 1967, a specified number of antlerless elk permits have also been available. Through such permits, hunters are able to harvest cows and calves.

In many parts of the state that are remote or difficult to hunt, the antlered bull regulation has worked well—although many mature animals are harvested annually, there has been no significant decline in the number of older bulls. However, in heavily hunted areas like the Elkhorns, the antlered bull regulation resulted in an extremely high harvest of all bulls. Harvest statistics indicated a much higher percentage of spikes being shot in the Elkhorns than in the state as a whole. During the 1980s, about half the statewide bull harvest was spikes and half was branch-antlered bulls, while in the Elkhorns about 70% of the bull harvest was spikes and only 30% was branch-antlered bulls. Exactly what was happening to the bull population in the Elkhorns under the antlered bull regulation was not fully realized until a portion of the bull population was radio collared and harvested bulls were examined.

From 1983-85, 230 bulls killed in the Elkhorns were examined. The age of each bull was determined through tooth eruption and wear patterns (see insert). Antler growth and development were also recorded. Elk calves are generally born in June, so yearlings harvested during hunting season are nearly 1 1/2 years old. Yearling bulls typically have spikes, although about 25% of them have branched antlers of up to three points on a side. The antlers are shed each winter and new ones are grown in the spring. Number of antler points is not a good indication of a bull's age, although bulls with fewer than three points on each antler are usually yearlings. Two-year-olds typically have four or five points on each antler, but may have as many as six or as few as three. Bulls 3 years old and older generally have six points on at least one antler. As bulls grow older, antlers tend to become more massive; maximum antler size generally is not attained until bulls are at least 5 years old. As bulls reach old age (over 10 years), antler size usually diminishes. Antler development varies in different parts of the state. For example, less than 10% of the yearling bulls from the Gardiner-Gallatin area exhibit branching, while about 25% of the yearlings from the Elkhorns have branched antlers.

Under the antlered regulation in the early 1980s, almost 85% of all bulls harvested in the Elkhorns were yearlings, between 10% and 15% were 2-year-olds, and less than 5% were 3-year-olds or older. This is a significantly higher harvest of yearling bulls than that which occurs statewide, and a significantly lower harvest of larger bulls.

In 1984 and '85, 49 bulls were radio collared: 35 yearlings, and 14 2-year-olds. Monitoring these bulls during the hunting season revealed that 30 of the 35 yearlings—almost 90%—and all 14 of the 2-year-olds were harvested by hunters. These results indicate that under the antlered bull season, in an accessible and intensively hunted area like the Elkhorns, the majority of the bull harvest is yearlings and few bulls survive to older ages. In fact, under this regulation, only six of 230 bulls examined were more than 2 years old. Winter surveys confirmed these findings—less than 1% of all wintering elk were antlered bulls and the few bulls that survived the hunting season were almost always yearlings.

Branch-Antlered Bull Regulation

During 1986, a branch-antlered bull regulation went into effect in the Elkhorns. This type of season protects spikes but allows harvest of bulls that show branching of four or more inches on either antler. The purpose in implementing a branch-antlered bull season for 1986 was to protect spikes for one year, so that when the "spikes legal" season went into effect in 1987, a sufficient number of bulls would be available to issue some branch-antlered bull permits. Had the season been directly changed from antlered bull to spikes legal/branch-antlered bull permits, it would have taken several years for the bull population to build to a level where branch-antlered bull permits could be issued.

Before the 1986 branch-antlered bull season, 31 bulls—25 yearlings, and six 2-year-olds—were radio equipped. During the hunting season, approximately

half of the radioed yearlings were harvested by hunters. This included all the branch-antlered yearlings, as well as several spikes killed illegally. Five of the six radioed 2-year-old bulls were also taken. Overall, hunters took about 60% of all radioed bulls—considerably fewer than were taken under the antlered bull regulation, when over 90% of radioed bulls were killed each year.

The branch-antlered bull regulation in 1986 had several positive results. The number of spikes on the winter range increased from less than 1% of the total elk population to almost 6%. In addition, the number of 2-year-old bulls available for the fall rut—and to hunters—increased. The primary drawback of the branch-antlered bull season in the Elkhorns is that it will produce few bulls more than 2 years old. By directing hunting pressure away from spikes, it results in a heavy harvest of any branch-antlered bulls available; it also results in illegal harvest of some spike bulls.

Spikes Legal/Branch Antlered Bull Permit Season

Although branch-antlered bull seasons have been successful in increasing the number of bulls in several southwestern Montana elk herds, they do not seem to be the answer for increasing the number of older bulls in the Elkhorns. Another option—permit-only elk hunting—would undeniably increase the number of big bulls, but it would severely restrict the number of hunters who could participate. The spikes legal/branch-antlered bull permit season attempts to combine the best features of permit-only hunting with an unrestricted spike season. The biggest drawback—requiring the majority of hunters to take only spikes—is not such a big drawback when you consider that 70% of the bull harvest in the Elkhorns in recent years has been spikes anyway. The new season allows continued harvest of spikes and also provides the opportunity for some hunters to take older bulls—an opportunity almost non-existent in recent years.

Special efforts were directed at evaluating the new season during 1987, since it hadn't been tried before. During

GARY D HOLMES

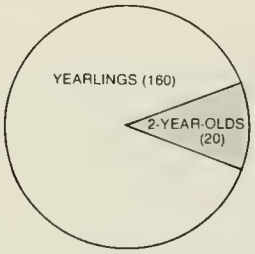
Mature bulls often occur in portions of Montana that are unroaded and relatively undisturbed. To have these bulls in areas that are accessible, hunting restrictions, such as the new season in the Elkhorns, will be necessary.

the 1987 hunting season, 81 bulls—70 spikes and 11 2-year-olds—were examined. This sample represented approximately half the total number of bulls harvested in the Elkhorns (according to harvest survey data). Fourteen of the 50 hunters who held branch-antlered bull permits in 1987 were successful, and all 14 of these bulls—three yearlings and 11 2-year-olds—were included in the sample. No bulls 3 years old or older were examined, which reflects the heavy harvest of 2-year-olds under the branch-antlered bull regulation in 1986. However, the high survival of 2-year-old bulls in 1987 indicates that a good crop of 3-year-olds will be available for branch-antlered permit holders in 1988.

During 1987, 32 radio-collared bulls were monitored (16 yearlings, 14 2-year-olds, and two 3-year-olds). Eight of the yearlings and four of the 2-year-olds were harvested, but neither of the two 3-year-olds was taken. Overall, hunters took about 40% of the radioed bulls—significantly fewer than in 1986 under the branch-antlered bull season, when 60% of the radioed bulls were taken, and far fewer than in 1984 and 1985 under the antlered bull season, when about 90% of the radioed bulls were harvested. As expected, harvest of branch-antlered bulls was well below that during the 1984-86 period, when 95% of the radioed 2-year-old bulls were harvested.

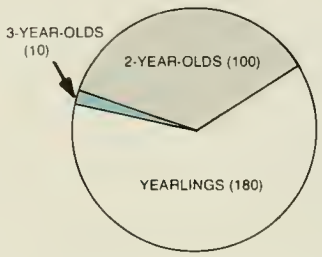
In fact, surveys of the wintering elk population in the Elkhorns during 1988 revealed the highest number of bulls ever recorded in the area. Approximately 10 bulls were inventoried for every 100 cows, and over 40% of the bulls inventoried were 2 years old or older. Thus, after only one year, it appears that the new season has had a beneficial effect on the bull segment of the elk population in the Elkhorns. Continued monitoring will be needed to determine if calf production is positively affected and if the number of older bulls continues to increase.

AGES AND NUMBERS OF BULLS IN THE ELKHORN MOUNTAINS BEFORE THE HUNTING SEASON



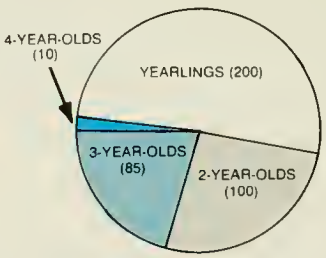
BEFORE THE 1986 SEASON (AFTER SEVERAL YEARS OF ANTLERED BULL REGULATION)

Under the antlered bull regulation, the bull portion of the herd was composed predominantly of yearling bulls. Although a few bulls survived the hunting season, the opportunity to harvest an older bull was very limited.



BEFORE THE 1987 SEASON (AFTER ONE YEAR OF BRANCH-ANTLERED BULL REGULATION)

One year after the branch-antlered bull season was implemented in 1986, the number of bulls in the herd increased by over 60%. However, by directing hunting pressure away from spikes, this regulation resulted in a heavy harvest of branch-antlered bulls. Very few older bulls occurred in the herd.



BEFORE THE 1988 SEASON (AFTER ONE YEAR OF SPIKES LEGAL/ BRANCH-ANTLERED BULL PERMIT REGULATION)

One year after the spikes legal/branch-antlered bull permit season was implemented in 1987, the total number of bulls in the herd increased by over 100% compared with the antlered bull regulation, and by almost 40% compared with the branch-antlered bull regulation. The number of older bulls in the herd increased as well, because the harvest of branch-antlered bulls was limited by permits.

The Future

While elk hunting regulations play a significant role in determining the health of elk populations, it is important not to lose sight of what is happening to wildlife habitat. Portions of Montana that have remained unroaded and relatively undisturbed still enjoy hunting seasons with few restrictions and good opportunities to harvest big bulls. But as habitat dwindles, elk populations become more accessible and increasingly restrictive seasons are necessary.

The cooperative effort by the USFS and the DFWP in managing the Elkhorns has produced many important benefits for wildlife. Several road closures have gone into effect in recent years, providing walk-in hunting opportunities and increased security for portions of the elk herd. Timber harvest is being carefully planned in an attempt to improve wildlife habitat while at the same time maintaining adequate elk security. The area provides a good example of how elk and elk hunting can be positively influenced through a combination of habitat management and hand-tailored hunting regulations.

Montana has long been one of the nation's premier elk hunting states, providing an assortment of hunting opportunities over a diverse range of habitats. The new spikes legal/branch-antlered bull permit season in the Elkhorns appears to be working, but it will be several years before the final word is in. In the meantime, we will continue to monitor the elk population, paying special attention to the bull harvest, the herd structure, and calf production, in an effort to maintain hunting opportunities that meet the expectations of the majority of those who hunt the Elkhorns herd.■

NONGAME NEWS

UPDATE ON LE CONTE'S SPARROWS...

David Genter, zoologist with the Montana Natural Heritage Program, was joined by four volunteers from Missoula during July to search for the elusive Le Conte's sparrow on its nesting areas in Glacier National Park. This small grassland sparrow is considered a Montana species of special concern because of its scarcity and limited distribution.

It has been seen but a handful of times in eastern Montana, and it is known to occur in scattered locations in Flathead County. The July trip was scheduled to check five sites in Glacier Park where the species is known or suspected to breed, including three sites used since the 1950s, and two found last year. All sites in the park are wet meadows.

The searchers failed to find nests but they found birds at every site. Females are extremely difficult to flush from the nest, and often flush far from it. Unfortunately, this year's efforts came after the peak of male territorial activity, so it was impossible to census singing males. Genter noted that one of the sites, Big Prairie, contained less than optimal habitat. Peak populations are found in wetter sites along the east side of the North Fork. Another site on private land near Whitefish used in previous years was not checked this year. Habitat at that site has deteriorated because of grazing pressure and natural succession.

Nest searches will be scheduled again in 1989. They will probably be scheduled earlier to coincide with the peak of male activity, allowing a more complete census of breeding populations.

... AND HARLEQUIN DUCKS

The Montana Natural Heritage Program contracted with Gene Miller, a University of Montana student, to try to find breeding harlequin ducks. Another Montana species of special concern, harlequin ducks prefer to nest along swift, clear mountain streams. Miller concentrated his 1988 search in two areas: tributaries to the lower Clark Fork, and tributaries to the Bull River. New locations from such Clark Fork tributaries as the Vermilion River, Rock Creek, and Martin Creek brought the total known nesting streams to 20. Interestingly, no birds were found in similar habitats in the Bull River drainage. The birds seem to be very selective even within the drainages they inhabit, preferring secluded reaches.

An expanded effort to locate harlequin nesting areas will be conducted in 1989. Efforts will focus on some areas where the birds were seen or reported this year, but nesting was not confirmed, such as the Yaak River, White Pine Creek, and Big Beaver Creek.

KIDS FOR WILDLIFE

A new group for kids—and run by kids—was formed in Whitefish last spring. Called "Kids for Wildlife," the group was organized by home schoolers as a way to teach children about wildlife through hands-on experiences.

Projects in 1988 included putting out bluebird boxes, building and placing floating nesting platforms for loons on two local lakes, and helping to monitor a nesting pair of bald eagles. On July 18, the group sponsored a workshop at Lone Pine State Park, "Wolves: Facts and Tracks." The workshop was designed for kids 6 years old and over and included four booths. To provide facts and dispel some myths about the wolf, those staffing the booths emphasized physical traits, communication, territoriality, and tracking and radiotelemetry (this one was staffed by Mike Fairchild, a wolf researcher). The day also included some storytelling, songs, and a musical presented by the kids focusing on endangered species. The group is planning a trip to Wild Horse Island next year to learn about the needs and behavior of bighorn sheep.

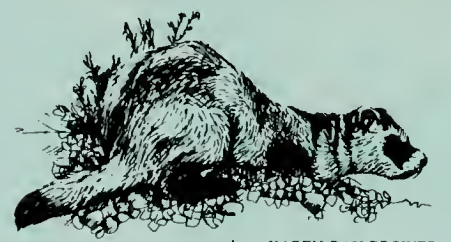
FERRETS IN ALBERTA

As of this writing, researchers throughout the region were excited about the possibility that black-footed ferrets had been discovered in Waterton Lakes National Park, immediately north of Glacier National Park. The ferrets were reported by Frank Goble, a Waterton resident, whose son first sighted a "strange weasel" in the park in 1983. The Goble family finally reported the animals this year, after repeatedly observing them and becoming convinced of their identity. Park policy forbids trapping the animals to verify whether they're truly black-footed ferrets, or escaped European ferrets, a similar

species commonly kept as pets.

As reported previously in *Montana Outdoors* ("WANTED: The Masked Stranger," July/August 1987, and "Montana's Rare Ones," March/April 1988), the black-footed ferret was considered extinct until a colony was discovered outside Meeteetse, Wyoming, in 1981. Captive animals from that population, now the only known live ferrets, had a banner year in 1988, breeding successfully in captivity. That group now numbers 64 animals, and has boosted hopes of successful future reintroductions to the wilds of Wyoming and Montana.

Researchers have thought that ferrets used prairie dog colonies exclusively, but the Waterton animals are using a Columbian ground squirrel colony. If



graphics: KAREN RAY BROWER

the ferrets turn out to be black-footed, this would reshape our image of suitable habitat for the species, and would expand the likelihood of finding other wild ferret populations. As the status of the mystery ferrets in Waterton becomes better known, it will be reported in *Montana Outdoors*.

BLUEBIRD UPDATE

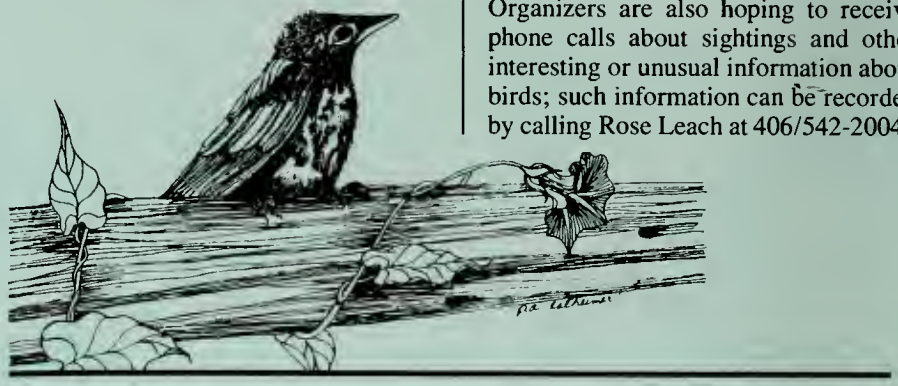
The resounding successes of bluebird nest box trails across the state and region is continuing.

Perhaps the most exciting development for bluebirds was the commitment by Mountain Bluebird Trails to place a continuous trail of nest boxes across the entire state, from Noxon to Glendive along Highway 200. This authorized Montana Centennial project must be completed by spring 1989, but volunteers are working hard to complete as much of the project as possible before the Centennial. Within four or five years, western, mountain, and eastern bluebirds could be occupying the boxes. Some eastern bluebirds got a jump on the project when they nested in boxes in the Miles City area in 1987!

The Centennial Bluebird Trail documents the importance of the efforts of dedicated amateurs to nongame species conservation. Spin-offs from this trail of boxes across the central part of the state should help assure the future of these three species in Montana.

BIRDING HOTLINE

The Five Valleys Audubon Society of Missoula is sponsoring a new service for birders. A birding hotline was initiated to inform interested callers of recent arrivals, rare visitors, and other noteworthy birds. The (toll call) number is 406/721-2935. The phone line was funded in part with contributions from Audubon members, local businesses, and a donation from the income tax checkoff. Additional funds will be needed to maintain the service; contributions can be sent to the Five Valleys Audubon Society, c/o Suzann Stickney, 2312 Duncan Drive; Missoula, MT 59802. Organizers are also hoping to receive phone calls about sightings and other interesting or unusual information about birds; such information can be recorded by calling Rose Leach at 406/542-2004.



Courtesy Is The Key

continued from page 21

ing down a dirt road, we spotted some pheasants in the ditch near a farmhouse. But there were orange fence posts nearby. Instead of continuing on down the road, we took a chance, stopped, and asked.

The woman of the house came to the door, invited me in, and got on a two-way radio to her husband who was out fixing fences with their son. After a brief radio conversation, she asked who I was. I told her, she told her husband, and she said, "Sure, you can hunt." In fact, she told us we could start just behind the house—where two rooster pheasants were watching us unload guns and dogs from our rigs.

It was an extremely windy, cold day, and the four of us missed our first few shots as the pheasants got up into the wind and outran our shotgun pellets.

We were walking up a draw when a pickup truck turned into the adjacent field and came up beside us. We expected that we might be challenged, asked if we had permission to hunt. But it was the farm couple's son, and he said he just stopped by to see how we were doing. Not only that, he invited us to come down and hunt on his land, about three miles away. And he told us his mother had coffee and fresh cake if we wanted to stop back at the house and warm up.

After he drove off, my hunting companions and I looked at one another, shook our heads, smiled a collective smile, and proceeded up the draw.

Talk about hospitality!

And the pheasants, Huns, and sharptails we encountered suddenly couldn't outfly our pellets.

Two hours later, tired and hungry, we returned to the farmhouse to thank our hosts. We were asked to come inside, served hot coffee and cake, and discovered that although we lived more than 400 miles apart, we had common friends and lots to talk about. Not only that, we were invited back the following day.

As a hunter, there's really no way you can show your true appreciation for such treatment. We gave a couple of pheasants to the grandson of the farm couple when he got home from school that first day, just as we were ending our hunt. The four of us pitched in to buy a gift certificate for the two families at the best restaurant in town.

And my two out-of-state friends said, yeah, they sure would like to come back and hunt in Montana again.■

* * * * *

• *Warren Wintrode, Helena, wrote this column for the Associated Press.*—Ed.

WILD and Growing

by Cheryl Charles

Fourth grade students smile and laugh as they work. Their classroom is colorful and interesting, and bright bulletin boards accent the wall. There are shelves of books, a computer in the corner, tables, and desks.

But there's more. There's an aquarium with aquatic insects. A moth's cocoon rests on a branch in a ventilated glass container on a table, easy to see and check for activity. A domesticated rabbit—obviously accustomed to children—nibbles green leaves and twigs. Two students busily record information on a chart as they observe the activities of two young gerbils. Under the watchful eye of a teacher and the other students in class, one student carefully picks up a gopher snake—holding it while the others gently touch it—during a class discussion of the contributions of snakes to natural ecosystems.

The class has been studying wildlife and its habitat. Students have compared wild and domesticated animals. They have learned that animals need food, water, shelter, and space all suitably arranged and available. They have been talking about the importance of wildlife—including how wildlife can be an indicator of the quality and health of the environment. They

have learned that if wildlife is threatened, people may be threatened as well. These students are learning that the single greatest threat to wildlife today in the United States is loss of habitat—loss of a suitable environment in which to live. They are learning that they can make a difference—that each of us, in our own lives, can take responsible action to benefit people, wildlife, and our shared home, Earth.

Unusual? Not in a wild classroom—a Project WILD classroom, that is.

What is Project WILD?

Project WILD is a conservation and environmental education program for teachers of kindergarten through high school. The project provides teachers with instructional materials and techniques for integrating education about wildlife and the environment into the mainstream of public education. Project WILD instructional activities fit within major school subject areas—reading, writing, mathematics, science, social studies, art, health, and physical education. The teaching materials are carefully designed to help students learn skills such as analysis, description, observation, evaluation, inference, communication, problem solving, and synthesis. Project WILD materials also help students learn *how* to think, not *what* to think, about value-sensitive issues involving wildlife and the environment.

More than 160,000 educators in the United States and Canada have participated in Project WILD workshops since fall of 1983. Averaging seven hours, workshops are lively and practical professional experiences designed to prepare teachers to use the Project WILD materials with their students. Based on studies of teacher use of Project WILD materials in classrooms after a workshop, we can conservatively estimate that more than 12 million students in the United States have received Project WILD instruction.

A teacher may use the activity, "Aqua Words," to teach how important clear and available water is to both people and wildlife. At the same time, students develop their vocabularies and writing skills. First grade students in Texas actually produced their own newspaper about water and wildlife issues in the Project WILD activity, "Aquatic Times." With the activity, "Oh Deer!" students convert mathematical data into graphs—while they learn about the essential components of habitat and dynamics affecting wildlife populations. In "Deadly Links," students learn how toxins accumulating in food chains might affect wildlife and the environment.

These are only a few examples of the more than 160 exciting and effective instructional activities developed as part of Project WILD. Independent evaluators review and formally test all Project WILD materials before they are distributed to teachers or students. After review and testing, the instructional materials are then offered free to teachers who attend Project WILD workshops. Response to the workshops is outstanding—99% of the participants in Project WILD workshops since fall of 1983 rate the workshop as either "excellent" or "good," and are enthusiastic about using the materials with their students.

Surveys after these workshops—to determine whether teachers actually use the Project WILD materials as part of their classroom instruction—yield encouraging results. A national survey of use based on a random sample of Project WILD workshop participants found 70% of those responding indicate they have used Project WILD activities with their students. Seventy-five percent said they have shown or loaned Project WILD materials to other teachers. Ninety-seven percent said they believe that from "some" to "most" of their students have more responsible attitudes toward wildlife and the environment as a result of Project WILD. A recent study in Wisconsin found 38% of the teachers reported that as a result of Project WILD, students had actually engaged in some project to benefit wildlife, such as building bird feeders or helping purchase a school forest. Some of the students were only first graders.

The Goal of Project WILD

Project WILD's goal is to assist learners of any age in developing awareness, knowledge, skills, and commitment to result in informed decisions, responsible behavior, and constructive actions concerning wildlife and the environment upon which all life depends.

Who Sponsors Project WILD?

Project WILD was originally developed and is co-sponsored at the national level by the Western Regional Environmental Education Council, a not-for-profit organization comprised of representatives from state education and natural resource agencies in 13 western states; and the Western Association of Fish and Wildlife Agencies, an organization of the agencies responsible for management of wildlife in the public's behalf in western states and Canadian provinces.

Additional associate sponsors at the national level are the American Fisheries Society, Canadian Wildlife Federation, Defenders of Wildlife, National Wildlife Federation, The Wildlife Society, and the U.S. Fish and Wildlife Service.

Although Project WILD was originally created by the 13 western states to improve the quality of education about wildlife and the environment available to young people and their teachers, the project has grown dramatically. Concern for wildlife and the environment is shared from coast to coast in North America. Forty-two states now officially sponsor Project WILD, with others expressing interest. Sponsorship at a state level is typically by the state's wildlife agency, working in cooperation with the state department of education. School districts, universities, colleges, nature centers, youth groups, and a variety of conservation organizations frequently assist.

Under auspices of the Canadian Wildlife Federation, Project WILD is officially available in most Canadian provinces and territories. More than 20,000 educators have participated in Project WILD workshops in Canada, including more than 6,000 teachers in the province of Ontario alone. As in the United States, the project is a cooperative effort of provincial wildlife agencies and departments of education.

International interest in Project WILD is growing. In fact, the national offices for Project WILD in Boulder, Colorado,

receive two or three inquiries each week from all over the world.

How Are Project WILD Materials Developed?

Development of Project WILD was officially approved at a meeting of the Western Association of Fish and Wildlife Agencies in Kalispell, Montana, in July 1980. Developing activity guides for elementary and secondary levels took nearly three years, from fall of 1980 to fall 1983.

The first step in developing Project WILD instructional activities was to prepare a detailed outline. Called the "Conceptual Framework," this outline appears in each of the Project WILD activity guides. It provides the foundation for the major ideas addressed in the Project WILD materials and is divided into these major sections: Awareness and Appreciation of Wildlife; Human Values and Wildlife; Wildlife and Ecological Systems; Wildlife Conservation; Cultural and Social Interaction with Wildlife; Wildlife Issues and Trends: Alternatives and Consequences; and Wildlife, Ecological Systems, and Responsible Human Actions. More than 500 reviewers evaluated this framework for accuracy and fairness.

With the framework as a foundation, a series of writing workshops was conducted to develop ideas for the activities that now appear in the Project WILD Elementary and

SPENCER SARTORIUS

Secondary Activity Guides. Outstanding teachers were brought to these conferences and asked to create the best activities they could to teach the concepts in the framework. Joining them were wildlife biologists; representatives of private wildlife, conservation, and animal welfare organizations; and others with expertise in education and the environment. This cooperative blending of expertise produced excellent results.

The next phase in the materials development involved perfecting the activities drafted at the writing conferences. Then the materials were reviewed by experts who checked for scientific accuracy, educational value, and balance and fairness in treating potentially controversial issues.

More than 120 of the instructional activities were then ready for formal pilot testing by independent evaluators to see if each activity's objectives were, in fact, accomplished when teachers conducted the activities with students. Following this

DFWP PHOTO

The goal of Project WILD is to help prepare young people to make informed and responsible decisions affecting wildlife and the environment. More than 160 instructional activities have been developed for students in classrooms ranging from kindergarten through high school.

testing phase, revisions were made. An additional full year of formal field testing followed, more revisions were made, and the first edition of the Project WILD Elementary and Secondary Activity Guides was made available to teachers in fall 1983.

All materials developed as part of Project WILD undergo similar extensive review and testing. Further, the activity guides are printed annually, and materials are updated as needed.

The Newest WILD Materials Are All Wet!

One exciting addition to the materials and services available through Project WILD is the new Project WILD Aquatic Education Activity Guide. The goal is the same as with other Project WILD materials—to help prepare students to make informed and responsible decisions affecting wildlife and the environment—but the special focus of these new materials is on water, aquatic wildlife, and aquatic ecosystems. Quality of water for people and wildlife is addressed. Students learn about the special characteristics of a variety of aquatic habitats—including freshwater wetlands, riparian areas, lakes, streams, rivers, and oceans. Students move from awareness to responsible action—and in the process learn how they can make a difference in their own lives to benefit people, wildlife, and the environment.

Like the original Project WILD guides, this new book for teachers is filled with well-developed instructional activities. Materials were carefully developed and tested over two years. Much of the funding for development of these new materials was provided through an agreement with the U.S. Fish and Wildlife Service.

Project WILD Is a Long-Term Effort

Preparing young people to make informed and responsible decisions affecting wildlife and the environment is a slow and continuing process, as is all education. Sponsors of Project WILD recognize that education about wildlife and the environment tends not to be a priority in the public schools of North America. Because we believe that wildlife and a healthy environment are important—and that people can make a difference to benefit people, wildlife, and the environment—we continue working to help teachers and other educators. Project WILD materials and workshops are enthusiastically received by educators, wildlife professionals, parents, and students. The program and many of the people working with it have received numerous awards and recognition at national, state, and local levels. If you are interested in helping young people and their teachers get WILD, let us hear from you!

Going WILD in Montana

• Montana Outdoors *interviewed Vince Yannone, assistant administrator in the department's Conservation Education Division, for an update on Project WILD in Montana.*—Ed.

MO: Who administers Project WILD in Montana?
Yannone: Project WILD is administered jointly by the Office of Public Instruction (OPI) and the Department of Fish, Wildlife and Parks (DFWP). Bob Briggs is the chairman from OPI (1300 11th Avenue; Helena, Montana 59620) and I'm the chairman from DFWP (1420 East Sixth Avenue; Helena, Montana 59620).

MO: How many teachers have taken the workshops in Montana?
Yannone: About 2,600.

MO: How many Montana students have been reached by Project WILD?
Yannone: We don't know exactly, but if you estimate average class size at 25 and multiply that by 2,600 teachers, we've reached roughly 65,000 students.

MO: What subjects do the workshops cover? Where have they been conducted?
Yannone: We have 18 facilitators—teachers especially trained to put on Project WILD workshops. Workshops have been conducted throughout the state, with major workshops in Glacier and Yellowstone National parks and along the East Front of the Rocky Mountains. At these major sessions, teachers come for Friday, Saturday, and part of Sunday; they receive instruction and hands-on experience with Project WILD activities.

Guidebooks have been developed for kindergarten through 12th grade. We distribute the guidebooks at the end of the workshops to all participants. By the end of the sessions, participants have a knowledge and understanding of how to use the guide, as well as some firsthand experience with some of the activities it describes.

MO: Do teachers receive credit for attending the Project WILD workshops? If so, through which universities?
Yannone: Participants receive college credit for the major workshops through the University of Montana in Missoula, Montana State University in Bozeman, and Western Montana College in Dillon. Graduate credit is sometimes available.

We also conduct mini-workshops, ranging from three to six hours. These are run locally and usually on weekdays.

MO: How does an interested teacher apply? Can someone who is not a teacher, but who is interested in the outdoors, take the workshops?
Yannone: A list of the 18 facilitators is available from OPI or DFWP, and they put on workshops throughout Montana. If you are not a teacher and want to take a Project WILD workshop, contact a nearby facilitator or check with your local school system. Workshops are filled on a first-come, first-served basis and are usually limited to 50.

By special arrangement, we can give workshops to civic, private, or public organizations, such as leaders of Campfire boys and girls, 4-H clubs, etc. Materials are adapted so these organizations can utilize them in summer programs.

MO: Are some activities unique to Montana's Project WILD?
Yannone: Project WILD works well in all settings in Montana. The outdoor enthusiast learns more about Montana's flora and fauna. You also learn about the needs of wildlife and how those needs are closely related to man's needs.

For those not so oriented to the outdoors, Project WILD also

provides interesting activities. If you like to sew, for example, there is an activity called "Make a Coat." Participants learn what materials were used in frontier days and are able to compare them with modern materials. No matter what your interest, Project WILD has some activity to challenge you.

One of the most popular activities in the guidebooks is "Owl Pellets." Participants look at actual pellets that have been regurgitated by owls. They learn about the owl's unique digestive system and how to analyze the contents of the pellets. More advanced participants can examine the various kinds of bones in the regurgitated material and compare the structures of different mammals eaten by the owl.

MO: What does Project WILD mean for environmental education in Montana?

Yannone: Studies show that about 70% of all Montanans do something in the outdoors, and the state is well known for its rich and diverse wildlife. This diversity helps make Montana what it is. People come from all over the world to observe Montana's natural wonders. To maintain this for future generations, wise resource decisions need to be made now. Project WILD helps to develop a strong environmental ethic in its participants. And it also helps in education and development of skills that can result in well-informed resource decisions in the future.

Today's young people will be making tomorrow's resource decisions. It's up to *our* generation to teach and educate the young so those decisions will be wise ones. Project WILD is one way we can do this. Consider becoming involved. ■

SPENCER SARTORIUS

Thousands of teachers all across North America have participated in Project WILD workshops since 1983. These workshops, which last about a day, are lively, practical sessions designed to instruct teachers in the use of Project WILD materials.

SPENCER SARTORIUS

Best of the Big Medicine

by Tom Palmer

The notion that city life can be mentally oppressive is neither radical nor new. "Cities give not the human senses room enough," was the way Ralph Waldo Emerson put it in 1836.

For those who enjoy the types of outdoor recreation Montana has to offer, that notion, more than anything else, is apparently fueling their desire.

Two surveys were conducted in 1986 by the Montana Department of Fish, Wildlife and Parks to uncover the attitudes of trout stream anglers (*Montana Outdoors*, March/April 1988) and elk hunters. Each has confirmed that the chance to enjoy the solitude of the outdoors is among the strongest motivating forces that lead one to hunt and fish in Montana.

"It was interesting to see what was revealed as important to people," said Arnold Olsen, Wildlife Division administrator for the DFWP. "In the elk hunter survey, the importance of taking a trophy elk came in way down the list, and I found that surprising. What was most important to elk hunters, like trout stream anglers, was the quality of life we offer."

Like Montana's recently released "Angler Preference Survey," the state's first survey of elk hunters produced a well-defined profile of a single group of sportsmen. The study focused on sportsmen who hunted for elk in 18 of 43 arbitrarily divided hunting areas that stretch from the Purcell Mountains to the Missouri Breaks and from the Bob Marshall Wilderness to the Absaroka Mountains. Dr. Stewart Allen of the University of Idaho gathered and compiled the information.

The survey was conducted in conjunction with an exhaustive study of the economic value of elk hunting in Montana that showed elk hunters spend more than $58 million in the state each year. More important, the study showed that the benefits elk hunters receive in Montana are annually valued at more than $37 million dollars over and above what they spent. This confirms a component of the preference survey which reveals that the majority of the sampled elk hunters feel their trip was worth more than they actually spent.

The preference survey was sent to a random sample of 6,000 resident and 2,000 non-resident sportsmen who purchased a 1986 Montana elk hunting license. It produced a total response rate of 65%, an acceptable return rate for mail questionnaires.

The objective of the survey was to produce a description of Montana elk hunters and to:

- specify the aspects of the elk hunting experience that produce the economic values mentioned above;
- learn the reasons why sportsmen hunt elk; and
- identify the different "types" of elk hunters who may hunt for different reasons but who obtain similar benefits from their experiences.

"The survey has given us a good idea of how the elk hunter views the opportunities and experiences we are offering," Olsen said. "It helps us to understand who the 'typical' hunter is, and that is important because we often don't get a chance to deal with the typical elk hunter on a day-to-day basis. Like the economic information generated in our other studies, this survey will become another tool we can use to help us build the best elk management program possible."

The study shows that elk hunting in Montana is an overwhelmingly male-dominated activity. Ninety-five percent of the sample were men. The majority of those surveyed had attended college and, although household incomes varied widely, an elk hunter is likely to fit in the $25,000 to $30,000 income bracket.

A resident sportsman who hunts for elk in Montana is most likely a 37-year-old male with 15 years of elk hunting experience behind him. He is likely to spend 10 days each year elk hunting in Montana and he is apt to consider elk hunting one of his favorite activities. He'll almost never hire a guide, and three of every 10 resident hunters he meets will probably belong to a hunting, sport, or environmental organization.

The non-resident elk hunter profile is a bit different. At 43, he is older than his resident counterpart and has been hunting elk for only eight years. Thirty-two percent of the non-resident sample hired an outfitter, compared with just over 1% of the residents. The non-resident is twice as likely as a resident elk hunter to belong to a hunting, sport, or environmental organization.

Respondents were asked to rank 16 reasons—from "very important" to "not at all important"—for choosing a particular hunting area. Of the five reasons that emerged as most important, only one was directly related to elk populations. Researcher Allen suggests this demonstrates that the presence of elk, although critical, was just part of partaking in a rewarding elk hunting experience.

Ninety-four percent of those surveyed said being outdoors was the most important reason for going elk hunting. A chance to "be in a natural setting" was runner-up, with 80% of the sample listing that opportunity as very important or important. Being able to "view the scenery" and experiencing "solitude" were close behind, with 79% of the sample listing those opportunities as very important or important. Seventy-two percent of the sampled elk hunters listed "many elk in the area" as among the important reasons for choosing an elk hunting area.

Allen also noted that of the two items traditionally viewed as the main products of elk hunting opportunities, "hunting for meat" was rated as a far more important reason than was taking a trophy, which was the sample's least important reason for hunting elk.

Again, the breakdown of residents and non-residents showed some disparity. For instance, residents placed more importance on "good road access," "hunting close to home," "hunting for meat," and "hunting with family" than did non-residents.

Non-residents, on the other hand, placed more importance on "solitude," "testing hunting skills," "taking a trophy elk," "viewing the scenery," "avoiding other hunters," and "being in rugged country" than did resident elk hunters.

When researchers looked at the elk hunter's most recent hunting trip, they found that 87% of the sample embarked on the trip with at least one other hunter. Although 10% of the sample said they did not see any other hunters during their trip, most respondents said they saw other hunters and remarked that they saw about the number of sportsmen they expected to see. A two-thirds majority of the sample said the other hunters they saw did not affect their own enjoyment. The dissenting one-third listed too many hunters, noise, lost solitude, competition for game, and "road hunting" among the annoyances they encountered.

"I think that segment of the survey reinforces what we suspected," Olsen said. "The quality of the hunting experience is still quite good, but there are some areas where we have some problems and probably should make some changes. Our highest priority, however, should be to maintain the elk hunting opportunities we have."

When one considers the average time spent afield by the surveyed hunters (five days at eight hours per day) and the amount of ground covered (six miles per day), seeing other sportsmen during the hunting season is probably not as common as seeing other game animals. While on an elk hunting trip, 40% of the non-residents and 33% of the residents harvested other game. Mule deer accounted for 66% and white-tailed deer accounted for 30% of the additional game harvest.

"It's significant that Montana offers that kind of hunting diversity," Olsen said. "We can offer a liberal and mixed bag and that's what helps to keep the quality of the experience high. It's something we who live in Montana often take for granted."

MIKE LOGAN

Although resident elk hunters had been hunting in a particular area an average of four years longer than had the non-residents, 20% of the non-residents successfully harvested elk, while residents managed a 17% success rate. Of the portion of the non-resident sample that hired outfitters, 31% harvested an elk.

Eighty-one percent of the elk harvested by residents were antlered, compared with 78% of the elk taken by non-residents. Nevertheless, a bull elk harvested by a non-resident was more likely to be larger than the one harvested by the resident elk hunter. A rifle was the weapon of choice for 99% of the sample; Olsen suspects that because the survey was conducted at the conclusion of the hunting season and focused on one's "most recent" elk hunt, it was skewed toward rifle hunters. Had the survey been conducted earlier in the hunting season, Olsen speculated, archers might have played a more significant role in the survey.

Two other portions of the survey have attracted the interest of wildlife managers. One segment suggests that elk hunters generally do not favor restrictions on the type of bull elk they can hunt or on where they can hunt each season. The other breaks down all the elk hunters into four distinct groups:

- generalist hunter, who most enjoyed being outdoors where game was abundant;
- meat hunter, who is most interested in hunting to fill the larder;
- nature hunter; who most enjoyed being outdoors for solitude; and
- trophy hunter, who most enjoyed hunting for a big bull elk.

"We really haven't ever looked at all of the hunter categories before," Olsen said. "We have always considered most hunters to be generalists. In the future, when we talk about hunting diversity and hunting season types, I think we'll have to take a closer look at who might be affected."

The constant among all the groups was the fundamental importance each placed on being outdoors. "These enchantments are medicinal," Emerson wrote. "They sober and heal us."

For many, the best of that big medicine can still be found in Montana.■